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VETERINARY MEDICINE

DECEMBER CONTENTS 1947

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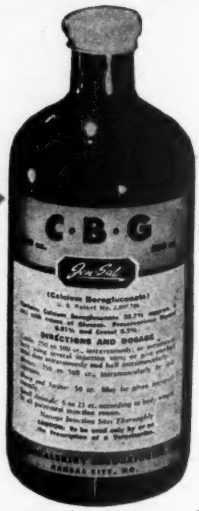

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When steers from the range develop sore feet in the feedlot add calcium, phosphorous and vitamin A to the ration.

Trichomonas abortion in cows usually occurs in the early months of gestation; Brucella abortion during the later months, but abortion due to *Vibrio jejuni* occurs throughout the period of gestation.

Lactation in sows varies as it does in cows, but not to the same extent. Gilts retained for breeding should have an inheritance for milk production and should have the teats well spaced. Gilts should be rather fat at farrowing time.

The highly artificial conditions under which our domestic animals are maintained in fenced enclosures and fed more and more the by-products of industry, render them far removed from natural conditions. Nutritional deficiencies must therefore take their place along with bacteria, viruses, parasites and hereditary defects in the broad differentiation of abnormalities encountered in the various species.

The practical value of supplying a reasonably complete diet at all times can be demonstrated readily by the supplementing of poor range feed with a little supplement before the animals have become too depleted. Such animals will winter well compared to others which are left to border on starvation before supplements are supplied. Profitable livestock management does not include allowing animals to border on starvation or failure to supply sufficient quantities of essential substances until symptoms appear.—G. H. HART.

There is considerable evidence that white muscle disease occurs in calves as it does in lambs, and the treatment is the same—alpha tocopheral (vitamin E).

Foot rot should be treated as a herd problem: eliminate the source, the mudhole in the cowlot, at the watering tank, in the pasture or elsewhere.

We think of estrus in cows as occurring at intervals of three weeks. Actually the normal period is 18 to 20 days. Normally it lasts 16 hours.—E. A. WOELFFER.

In a research project a cow suffering from pyelonephritis was given three million units of penicillin in beeswax on each of six consecutive days—a total of 18 million units. This medication had no effect on the course of the disease, but a profound effect on the expense.

When an outbreak of calf pneumonia occurs in a dairy barn, it is best to refer to it as "enzootic pneumonia." That avoids commitment that it is infectious, nutritional or environmental, but treat it as being all three. Give sodium sulfathiazole or sulfapyridine and bacterins; vitamin A, lots of it, the best ration that can be contrived, and eliminate wet bedding and drafts. In winter, that is when it usually occurs, avoid a warm moist atmosphere and of course exposure to cold. A temperature of 50 to 55° F. is far preferable to 70 or higher. In the spring turn the calves on to the best pasture on the farm, but protect them from cold rain and winds by housing when necessary.

A Primer

A farmer had two horses. Both had fistulous withers. He treated them daily. Soon he had undulant fever. Brucella organisms were found in the fistulas. No other source of infection of the farmer could be found.

The breeding efficiency and consequently the production of the dairy herd can be materially increased by making pregnancy examinations a routine. Much time is lost in breeding and hence in milk production, because owners *think* their cows are pregnant when they are not.

Mules

Mules have no distinctive ancestry and no hopes of progeny; but they have the courage of their convictions, the strength to think independently and the wisdom to be unhurried in decisions.—ARTHUR VERNON in "The History and Romance of the Horse."

For laboratory examination to determine the presence or absence of *Vibrio jejuni* in cases of bovine abortion select a fetus enclosed in the envelopes (they usually come that way) and take it to the laboratory promptly with as little contamination as possible.

A few months ago an experiment at the Purdue experiment station by which it was shown that the addition of salt to the ration of swine resulted in largely increased gains was reported in this magazine. One hundred years ago another veterinary magazine *(The Veterinarian)* reported that the rate of gain in sheep was doubled by the addition of three grams of salt to the daily ration at the Agricultural Institute at St. Germain. Just wait till the Pennsylvania Salt Co. hears of this.

The cow is the only domestic animal that ovulates after the end of the estral period. Ovulation occurs 12 to 16 hours subsequent to the end of the acceptance period. Ova are capable of fertilization for 20 hours after rupture of the follicle. Spermatozoa are capable of fertilizing ova for 28 hours after ejaculation. They require an average of 5½ hours to travel from the vagina to the upper third of the fallopian tube. Hence the conception rate is very low in cows mated during the first half of the estral period, but rises from the middle to the end of estrus. Artificial insemination may be successfully performed for several hours after heat is over.—E. A. WOELFFER.

Bullnose in pigs cannot be correlated with sanitation or lack or sanitation on the farm.

When the pigs of heavy milkers develop diarrhea, add 4cc of formalin at each feeding to the slop fed to the sow.

In suspected hog cholera, a white blood cell count supplies useful information. In cholera it is always under 8000, often under 4000. Dukes gives the normal number of white cells as 17,000 per cubic millimeter.

There never was such a demand in the world for trained veterinarians as there is today.—WM. MCG. MITCHELL, President, National Veterinary Medical Association of Great Britain and Ireland.

Drs. Welch, Hirsh and Taggart of the federal Food and Drug Administration announce the discovery that pectin given with penicillin, streptomycin and other drugs will slow the elimination of those agents, thus increasing the interval allowable between doses and reducing the amount of the medicament required. In the case of streptomycin they increased the dose interval from four to 48 hours and reduced the amount of this antibiotic required in the treatment of a case to one-twelfth of that necessary without pectin.

Blood Pressure

The first to measure blood pressure was Stephen Hales in England, who in 1733 attached a glass tube 12 feet 9 inches long to the left carotid artery of a horse, held the tube vertically and found the blood to rise to a height of 9 feet 6 inches. Poiseuille introduced the U form of mercury manometer in 1828. Von Basch, who was the first to perfect a sphygmomanometer for clinical use, had a glass cylinder containing a rubber bulb connected with a mercury manometer, later with a spring manometer. The open end of the glass cylinder was covered with a membrane. The cylinder was filled with water and was called a pelotte. The membrane of the pelotte was pressed over an artery against a bone. Potain's sphygmomanometer, 1889, replaced the water by air. Riva-Rocci in 1896 introduced the manometer of which most of the modern types are modifications. There has always been a question as to the effect on the blood pressure reading of the amount of soft tissue of the arm and the width of the cuff.—Downing, M. Elizabeth: Blood Pressure of Normal Girls from 3 to 16 Years of Age, *Am. J. Dis. Child.*, March, 1947.—*Abst. J. Am. Med. Ass'n.*

New Use for Blood Is Being Tested Under Armour Grant

The possibility that blood from slaughtered livestock and poultry may be used in immunizing live animals and birds against diseases is being tested by Dr. Hugh S. Cameron, veterinarian in the University of California college of agriculture. He is experimenting with two substances in the blood—gamma globulin and albumin, which can be separated by high speed whirling and delicate chemical methods.

In tests so far Dr. Cameron has been able to prevent hog cholera under controlled conditions in the laboratory. Under severe field conditions the protection would not be so effective, he said, because the antibodies produce only temporary immunity lasting from two to three weeks. In test tube trials, brucellosis in swine and cattle and mastitis have both been prevented with plasma fractions, but trials have not been made as yet with live animals.

The experiments are being carried on over a two-year period, with the aid of a $10,000 Armour and Company grant.—*Nat'l Provisioner.*

A Silver Lining

At a meeting of one of our farm organizations a man came to me and said: "I wish you would do some tuberculin testing in my county."

I told him I couldn't get anybody there in less than 90 days.

"Why not?" he asked.

"We are short of men," I replied.

"Well, get some more men."

"The men aren't available."

About that time a gentleman who carries a lot of weight in the state legislature strolled up. I explained to him that we were after veterinarians, that we had sufficient money to put more men in the field but we couldn't get the men.

"What's the matter," he asked, "don't they graduate veterinarians any more?"

"Yes," I replied, "but apparently not enough are graduated for I can't get any men."

"How long does it take?"

"About five years."

And the influential gentleman said: "I don't see why the hell it takes five years to learn how to kill animals. If an animal gets glanders you slaughter it; foot-and-mouth disease you slaughter it; tuberculosis you slaughter it; brucellosis you slaughter it. And I understand that in some places they are slaughtering cows because of mastitis. I was reading in the paper about some great national movement that is being planned to get rid of some of these so-called social diseases. It's a damn good thing you veterinarians are not handling that."—C. U. DUCKWORTH, at the 41st (1937) annual meeting of the U. S. Livestock Sanitary Association.

Taking in Too Much Territory

"The development of better methods of control, diagnosis and treatment of this widespread disease (human brucellosis) is one of the most pressing problems of the medical profession."—*Editorial, J. Am. Med. Assn.*, 134:9.

Since the disease is acquired by man solely from contact with animals or their products, one wonders what the medical profession can do about control. Further use of the word "better" in the quotation seems a poor selection, since it implies there is now a method of treatment.

Treatment of Cystic Ovaries

As for the treatment of cystic ovaries: I can't see the logic in rupturing an ovary, an act conducive to adhesions and dysfunction in the most sensitive tissue in the cow's body, when a hormone will do a better job and is so much less drastic. I give chorionic gonadotropin, 5000 to 10,000 units and repeat in 30 days if necessary, which is rarely the case.—W. C. GLENNEY.

Local Use of Sulfonamides Disapproved

"Experience gained in World War II seems to indicate that the use of crystalline sulfonamides as topical agents was not very successful in the management of wound infection or in treatment of infections of the skin or mucous membrane. The routine use of sulfonamides as topical applications in wounds, burns and in superficial infections is therefore to be discouraged."

The foregoing statement is from a report of the Council on Pharmacy and Chemistry of the American Medical Association. Continuing the Council stated:

"Nearly two years ago the Council on Pharmacy and Chemistry published a report on the 'Dangers from External Use of Sulfonamides,' citing the evidence then available that the promiscuous use of these drugs in the form of ointments, lotions, powders and other preparations suitable for local application resulted in the sensitization to these drugs of a high proportion of those treated. Since that time, evidence has continued to accumulate confirming the views then expressed.

"In dermatologic practice it has been found that systemic therapy, preferably with an antibiotic such as penicillin, or local therapy with antibacterial agents less prone to produce sensitivity, will effectively control most cutaneous infections formerly treated with sulfonamides and in general is more effective and far less hazardous to the patient."

Catarrhal Fever of Cats

Catarrhal fever is a disease of cats most likely to be confused with infectious gastroenteritis. It is the one which is, perhaps above all others, most often referred to as feline distemper and, in mild cases, as feline influenza.

This disease affects cats of all ages and may be acute or chronic; it affects the respiratory tract as well as the alimentary.

Acute cases are characterized by a severe conjunctivitis, lachrymation, sneezing, an abundant greenish-yellow discharge from the nostrils, salivation, stomatitis, vomiting and diarrhea, pharyngitis, fetid breath, offensive odor, bronchitis and sometimes pneumonia. Death may occur within 48 hours, but cases frequently recover. In less acute cases nasal discharge may remain and continue throughout life.

A milder form exists which commences with frequent sneezing and nasal discharge, at first serous but quickly becoming mucopurulent, salivation, lacrymation, pharyngitis, depression and disinclination to move. The appetite is regained when the throat condition improves and the nasal discharge clears up. The mortality is only about 20%.

It has been suggested that this may be another form of infectious feline enteritis, but it is interesting to note that Dalling found catarrhal symptoms in cats where no virus could be demonstrated and found that cats immunized against infectious gastroenteritis were not immune to catarrhal fever.—F. C. HALLIDAY-POTT, in *Vet. Rec.* 58:46, 1946.

A-Bomb Effects on Animals at Bikini

In "Operation Crossroads" 205 goats, 195 swine, 3867 white rats and 57 guinea pigs, a total of 4304 animals were employed to determine the immediate and delayed effects of fission explosions on every part of a ship that might be occupied by members of the crew.

Animal mortality resulted from mechanical injuries, burns and gamma rays. The latter caused the greatest number of deaths and is of chief interest. A minority of the deaths were due to an overwhelming dose of the ionizing radiation and probably were sudden as the animals were dead when the ships were first visited after the explosions. In the remaining group, the animals appeared healthy for from three days to a week after exposure. However, the total white blood cell count decreased within a few hours. At the end of a week or 10 days the red cell count also decreased and the clotting time increased. Clinical symptoms included diarrhea beginning three or four days after the exposure and in a week becoming bloody. The animals continued to drink but refused food and became irritable. As the anemia progressed weakness supervened and the animals lay down much of the time. The peak in deaths occurred about 14 days after the explosion and had practically ceased at the end of 30 days.

The principal lesions found on necropsy were those due to hemorrhage — petechiae, ecchymoses and small hematomas—and were found in all parts of the body, but to the greatest extent in the muscles. Blood clots were present in the renal pelves. Acute ulceration and gross hemorrhage occurred in the intestinal tract; chiefly in the mucous membrane of the large intestine. The lungs were mottled—dark red and pink.

Death was the result of three factors — anemia, secondary infection and toxemia due to absorption from degenerated tissue. Some deaths were due to these factors acting singly others to a combination of two or all of them.

Young pigs will starve in 36 to 48 hours if the sow has agalactia. Keeping the pigs warm will prolong their life without food up to 80 hours. Hypoglycemia in new-born pigs is a result of lack of milk plus low temperatures.

In the Veterinary Press of 1877

In view of the prevalence of hog cholera at the west, the *Chicago Tribune* advises everybody to become Jews, to the extent of eschewing the flesh of swine, as the only sure way of escape from possible unpleasant results.—*Vet. J.*

The attempt made in France to feed horses on maize instead of oats has failed.—*Vet. J.*

It is authoritatively stated that during the "dog days," there were captured in New York City 6783 dogs, of which number 6080 were drowned, the remainder being released or sold or on hand.—*Vet. J.*

Rabies continues to be prevalent in various parts of England.—*Vet. J.*

An American publisher in New York, Mr. Albert Cogswell, has pirated Mr. Hill's recently published work on the "Management and Diseases of the Dog." We ourselves have suffered from this species of dishonesty, so we can sympathize with Mr. Hill. We can offer him no redress, however, as nothing is published in the United States worth republishing in this country [England], so our authors and publishers have no opportunity for retaliation.—GEORGE FLEMING, in *Vet. J.*

There is too much prejudice in the present day against the man of theory by the men who glory in the euphemistic phase of "practical," and who sneer at all advance in pathology.—*Vet. J.*

Progress in Foot-and-Mouth Disease Eradication

The battle against foot-and-mouth disease in 30,000 square miles of tropical jungle and 15,000 square miles of rugged mountains in Mexico continues at a stepped-up tempo. The personnel engaged in the work was materially increased in number during both September and October and the shipment of equipment from the United States to the eradication forces was materially accelerated. At the beginning of October more than 1400 pieces of automotive and heavy equipment was in use by the field forces and additional equipment was arriving in Mexico City daily. The automotive equipment comprises jeeps, light trucks, bulldozers, power scrapers, draglines, heavy trucks, truck trailers, power spray pumps and paymaster's armored cars.

Two events occurred of outstanding importance among the measures facilitating the progress of the work of eradicating the plague from Mexico.

1. President Miguel Aleman, the Republic of Mexico, issued a decree effective September 22nd authorizing immediate disposal of all cattle, swine, sheep and goats, certified by veterinarians of the Commission for the Eradication of Foot-and-Mouth Disease to be either infected with or exposed to the disease.

Before this decree was issued a small percentage of the owners of condemned animals, who were dissatisfied with the value set upon them or who pretended to be dissatisfied, refused permission for the slaughter of their animals until they had exhausted legal appeal procedures.

Under the terms of President Aleman's decree owners of condemned animals will be unable, in the future, to prevent their disposal while appeals from the indemnity settlements are pending. After the animals have been certified to be infected or exposed to foot-and-mouth disease and valuations agreed upon the animals will be slaughtered and buried promptly. This does not affect the owner's privilege to appeal if he is not satisfied with the amount of indemnity offered. Relatively few appeals have been filed in the past and the commission expects no increase in the future.

President Aleman's decree will speed up eradication operations, lessen the burden of maintaining quarantines, decrease the possibility of spread of infection and contribute to earlier eradication of the disease from the North American Continent.

2. A second and probably more important event facilitating the progress of the work of eradication was a more willing acceptance of eradication measures by livestock owners and the public in the states concerned and better support of the work of eradication on the part of local officials and the general public.

As previously reported[1] a Mexican veterinarian and six Mexican soldiers were hacked to pieces, September 1st, by an angry mob of several hundred livestock owners. This resulted in a temporary suspension of all operations in the area. An investigation revealed that the trouble had been fomented and the mob incited by extremists of the party opposed to the present political administration in Mexico.

As a result the military force attached to the eradication joint commission was immediately augmented and a far-reaching educational campaign was launched immediately on all phases of the eradication effort.

Within two weeks hundreds of state and local committees, composed of local leaders of all classes, were set up to spread accurate information on the need for eradication and the wisdom of the measures employed. Measures were inaugurated to supply these committees with a constant stream of educational material. The move was strikingly effective. It is this better attitude of the public that makes practicable, the enforcement of the decree of the *Presidente* referred to in the foregoing and was in fact responsible for issuance of the decree.

As told last month, Dr. I. A. Galloway, Director of the Virus Research Institute at Pirbright, England, and a leading international authority on the viruses of foot-and-mouth disease, visited the scene of the outbreak in Mexico and later attended a conference on the subject in Washington. Since his return to Pirbright, Doctor Galloway is said to have reported that none of the vaccines, now being used successfully in Europe against the disease, are adapted to the type of virus responsible for the outbreak in Mexico. Doctor Galloway has had the Mexican virus under study since last January.

An international research effort launched into all phases of the disease is the hope of the Mexican and American research leaders.

Source of the Infection

Fixing responsibility for bringing the virus of foot-and-mouth disease into Mexico is deeply involved in politics. The culprit may never be determined. At first importations of purebred Zezu bulls from Brazil were suspected. Investigation just completed has exonerated them. Other sources of the infection are, importation of several *combatiente toros* from Spain and a surreptitious importation of a large number of Brazilian scrub cattle *via* Venezuela. Both are under investigation.

[1] *Veterinary Medicine*, October, 1947, page 357.

Army Needs Veterinary Officers

As a result of the lowering of the length of service for separation criterion to two years on July 1, 1947, and a greatly decreased intake of officers, the strength of the Veterinary Corps has been reduced to the point that the over-all efficiency of the Corps is seriously impaired. It has been necessary to spread the available personnel so thinly that some installations are wholly without veterinary service.

Under the provisions of Public Law 381, 80th Congress, which provides for a total Regular Army officer strength of 51,000, the Secretary of the Army has determined that the strength of the Regular Army Veterinary Corps shall be 186 officers. Similar to the situation which exists in the case of all other arms and services, the authorized strength of the Regular Army Veterinary Corps is less than 50% adequate to meet the officer requirement of the Army at its present strength or probable strength for several years to come. In order to meet the total requirement for veterinary officers it will be necessary that more than 200 Reserve officers be on extended active duty at all times. The number now on active duty is below that figure.

A considerable number of veterinary officers who returned to civil life after war service have applied for recall and have been returned to active duty, however, the number has not been sufficient to offset attrition. Officers who served during the war are encouraged to apply for recall to active duty. WD AGO Form 160, which is the form used in requesting recall, can be obtained at any military installation or by addressing an inquiry to The Surgeon General, Department of the Army, Washington 25, D. C. An officer may be recalled in the grade held by him prior to separation from active duty provided he holds a commission in the Veterinary Corps Reserve, has an acceptable efficiency record, and agrees to serve for a minimum of two years (Category VIII) or for an indefinite period (Category I). It is believed that any veterinary officer recalled to active duty may feel reasonably assured that with satisfactory performance of duty he may remain on duty for at least several years if he so desires.

Veterinarians with no prior military service may make application to The Adjutant General of the Army to be commissioned in the Veterinary Corps Reserve and request extended active duty. The grade in which such an individual can be commissioned is governed by his age, by the length of his professional experience period, and by his professional qualifications as demonstrated in his civilian professional pursuit during such period. Applicants with less than one year's experience subsequent to graduation must be commissioned in the grade of second lieutenant.* Those with more than one year of experience may be appointed in the grade of first lieutenant or such higher grade for which they may be eligible by virtue of age, experience, and qualifications.

The Veterinary Corps of the Regular Army has been filled to its authorized strength by the commissioning during 1946 and 1947 of veterinarians who served under temporary commissions during the war period. These appointments were made under the integration program authorized by Public Laws 281 and 670, 79th Congress. The authority to make appointments under these laws terminates on December 31, 1947, and vacancies occurring in the Regular Army Veterinary Corps after that date must be filled by appointments made under the provisions of Section 506 of Public Law 381, 80th Congress, Officer Personnel Act of 1947. Persons so appointed must be over 21 years of age and not over 32 years of age at the time of appointment, except that the maximum age may be exceeded by the amount of active duty commissioned service not in excess of five years the appointee may have had subsequent to December 31, 1947. Appointment in the Regular Army Veterinary Corp must be in the grade of second lieutenant* or in such higher grade for which the appointee may be eligible by virtue of credit for active duty commissioned service performed after December 31, 1947. One year of such active duty credit establishes eligibility for appointment in the grade of first lieutenant—five years for a captaincy. A considerable number of vacancies will have to be filled during the next few years because of the certain separation from active duty of many officers who entered service during World War I.

The method of hereafter procuring officers to fill vacancies occurring in the Regular Corps is described in Section V of War Department Circular No. 101 dated April 19, 1947. The primary method will be by the selection and appointment of officers who meet the age and other general requirements and who have demonstrated their fitness for appointment by having performed at least one year of continuous active duty under a Reserve or AUS commission after December 31, 1947. Under current regulations an officer entering active service, either recalled or initially entering active service, for the purpose of competing for a Regular Army appointment must agree

*Editor's note: It is the consensus of a number of veterinarians, having altogether many years of army experience, that no veterinarian should accept a commission in the grade of second lieutenant in peace-time. That army grade is a serious reflection on the professional standing of all veterinarians both in the military service and out of it.

to serve a minimum of two years. It is contemplated that procurement by direct appointment in the grade of second lieutenant as the result of a competitive professional examination will not ordinarily be used. Any officer who applies for and is recalled to active duty and who at the time of entering active duty is under 32 years of age may, upon his written request, be placed under observation for a period of one year during such active duty period with a view to his selection for appointment in the Regular Army. Any officer recalled to active duty and later appointed in the Regular Army would continue to serve in the temporary grade held by him at the time of such appointment or such higher grade to which he might be subsequently promoted until such time as general demotion from temporary grades is ordered for the Army at large.

Should the questions of any interested person not be fully answered herein, an inquiry may be addressed to The Surgeon General of the Army, Attention: Veterinary Division, Room 2-E-531 The Pentagon, Washington 25, D. C.

* * * *

The Veterinarian in Public Health

With the field of public health service becoming ever broader, it becomes increasingly necessary for public health administrators to include on their staff selected members trained in the various aspects of biological science. The tendency to restrict such a move will result in an unbalanced service. The biologist, agricultural specialist, and veterinarian all have valuable contributions to make.

The veterinarian's services are essential to public health work. Veterinary medicine protects the commercial value of animal products. Public health medical personnel have observed that nowhere in the world is it possible to find a successful health program where an animal industry is not established. Most pronounced mineral and protein deficiencies in the human diet prevail in communities not supporting a good animal industry. There is a direct correlation between communities that support an extensive animal industry and areas which have a reasonably good living standard. It is impossible for the animal industry to flourish without adequate veterinary service.

Certain communities have become cognizant of the need for veterinary services. In the United States, the relation of the veterinarian to the field of public health is being reviewed. The justification for this is found in the fact that there is a direct relationship between the incidence of disease in man and the incidence of the same disease among animals. Despite the increasing number of animal infections now recognized, those of an enzootic nature have largely been eradicated from the North American continent. The 36 animal infections known to be transmissible to man present public health problems and demand a place for the veterinarian in the diagnostic field.

In the United States, during the interval from 1927 to 1943, inclusive, there occurred 38,508 cases of human undulant fever infection, of which 1,340 cases terminated fatally. Infection of the human gastrointestinal tract is most important. Stafseth has identified 32 Salmonella species strains, of animal origin, from poultry. The importance of salmonellosis in other domestic animals, especially swine, surely places the study of bacteria in humans and in animals on a common base.

A glance at the field of virology, also, shows that its problems are common to both humans and animals. This is proved by Howitt's identification of the encephalomyelitis virus strain, and Giltner's identification of the Eastern equine strain. It has been shown that the St. Louis strain of virus can affect the horse, just as the equine or horse virus can affect man and infect vast multitudes of human beings. —ANDREW MCNABB, Principal, Ontario Veterinary College, in *Can. J. Pub. Hlth.*, 38:9. 1947.

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One of the Greatest Miracles of Modern Medicine

Finally I would like to speak of the miracle which has occurred in eliminating tetanus from military surgery. Let me recall some figures: In our Civil War the mortality rate was from 89 to 95%. Shortly before World War I under the benefit of antitoxin, which was discovered and elaborated on by the use of animals, the mortality rate had dropped to between 40 and 80%. During World War I large statistical evidence showed a mortality rate of 20 to 58%, but in the Second World War only 11 cases are known to have occurred among 10,700,000 men. Of these 11 cases, five had been given toxoid and six had not. Moreover, in the 11 cases there are records of only four deaths, two of which occurred in individuals who had received the basic series of toxoid but no booster dose, and two in individuals who had not received even the basic series. This is, in my mind, one of the greatest miracles of modern medicine. The basis of the establishment of a proper toxoid rests squarely on animal investigation, and no greater debt could be acknowledged to our friends in the animal kingdom than this advance for the good of humanity.—CUTLER, ELLIOT C.; Experiences of an Army Doctor in the European Theater of War, *Am. J. Surg.*, June, 1947.—*J. Am. Med. Assn.*

A Glance Along the Back Trail

The end of long delay in starting a government sponsored veterinary service for the large and fertile livestock industry of the United States was initiated by bovine contagious pleuropneumonia and hog cholera—the lung plague came to dairy cows of Long Island in 1843 and the swine pest that emptied the small hoglots of central Ohio[1] in 1833. The first was imported from England, the second from no-one-knows-where. The one was eradicated in 50 years, the other still bites with venomous fangs, at around 75 million hogs in the United States alone—all vulnerable if not artificially immunized by one of several successful technics developed in the present century. The cattle plague, by comparison, has been chased to somewhat narrow bournes in remote centers over seas.

According to "The Lung Plague of Cattle," a 100-page booklet by James Law of Cornell University,[2] published in the 1870's, bovine contagious pleuropneumonia, *alias* cattle plague, was brought to this country in 1843 when Pete Dunn, Brooklyn dairy farmer, bought a cow from the captain of an English ship anchored on East River (about where the Brooklyn Bridge now stands). The cow had lung plague. She contaminated Pete's herd and soon spread the infection to nearly all of the dairy herds on the west end of Long Island, the milkshed of New York City. When news got around that the toll of the plague was ten million dollars a year from the livestock farmers of England and was ravaging the cattle herds of Continental Europe (and no one over here knew what to do about it), the Congress—so the story goes—directed that Secretary of State John C. Calhoun (1844-1845) get a line on the treatment, forthwith, from our consular service in Europe. It is a matter of record (true or false) that the illustrious Calhoun ordered his consuls to "send over a recipe for *peripneumonia pecorum epizootica*." If the event, in the manner told, has the humoristic touch or is entirely a figment of someone's imagination, it nevertheless gives a true picture of the American veterinary service in the 1840's and the public knowledge of applied veterinary science, at that time and later; since in 1860 the Congress repeated the request for a cure; this time directed to the Hon. Jacob Thompson, Secretary of the Interior (Vet. Mil. History of U. S.). Content with its profound knowledge of murrain, wolf-in-the-tail, and hollow horn, our cattle industry was little concerned about the goings on across the sea, until struck with something the eye could see and the pocketbook could feel. Naturally, the American consuls in London, Edinburg, Glasgow, Alfort, Hannover, Milan obediently sought a recipe for lung plague, and quite as naturally, some of these cultured functionaries reported back that "over there" the veterinary colleges trained men to take care of such matters and that the "recipe idea" was out of fashion. Love these the consuls and their letters! They knew the score but they were writing to their official superiors. They planted the seed of veterinary education and service for the first time in official places in this country. The figurative plant did not thrive too well. It early came upon a prewar-, war-postwar period, that was not wholesome for cultural advancement, and therefore bloomed its first worthwhile flower in the form of the federal bureau of animal industry 40 years later (1884). The Massachusetts Cattle Commission, the new chairs of veterinary science in the agricultural institutes of New York, Ohio, and Illinois, one private veterinary college (the American (1885)) in New York City, and the founding of a state cattle sanitary service in Illinois (1881) are prominent among the sproutings which, during these 40 years, grew out of the federal effort to stamp out the Brooklyn outbreak of lung plague.

This piece is intended mainly to establish an authentic starting point of the present veterinary service of the U. S. A. In Canada, where numerous Americans went for veterinary college training, two colleges—Ontario (1862) and Montreal (1866)—came upon the scene during the primeval 40 years. They did not have to contend with war and postwar problems at the start and experienced far less difficulty.

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Still Looking Backward

In the September, 1847, issue of *The Veterinarian*, 100 years ago, Edward Mayhew, M.R.C.V.S., described the injection of medicines and gruel through a "common elastic horse catheter," passed through the nostril in a case of tetanus. In a note the editor of the magazine (Percival) states, "we have made the experiment and found it succeeded admirably." In the same year *The Veterinarian* published an obituary of John Read, aged 86 years, in which it was stated he was the inventor of the stomach pump.

[1] There is considerable doubt as to when hog cholera was first recognized in the United States, because early writers included *Salmonella choleraesuis* infection along with the virus infection. When the view was held that *S. choleraesuis* infection is hog cholera, the B. A. I. put the date of discovery as 1833. Veterinary Military History of the United States, written after the virus cause of hog cholera was known, and relying principally upon epizootiological data sets the date of the first recognition of hog cholera as 1858.

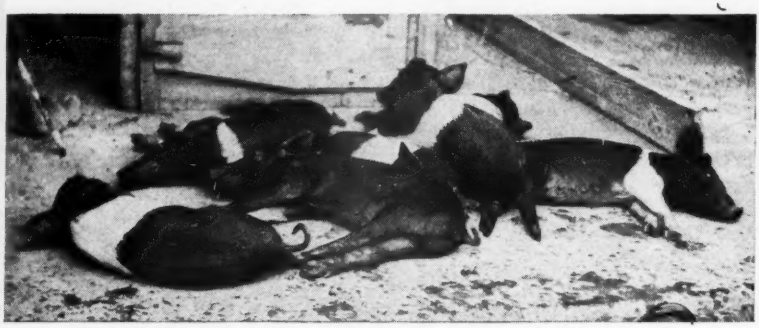
[2] Cited in Contagions of Swine and Other Domestic Animals, authorized by the Forty-Sixth Congress, May 6, 1880. Also identified as Department of Agriculture, Special Report No. 22, 1880.

Muscle Cramps in Horses

Harness horses, and thoroughbreds also, that suffer from cramps are relieved by thiamine (vitamin B_1). Give 330,000 units the first day and after that, one-half that amount for four or five days. Then add brewer's yeast to the ration for the remainder of the training season.

Treatment for Phenothiazine Poisoning in Swine

Phenothiazine is available to the livestock raiser in drugstores, at feed stores, from mail order houses and elsewhere. Many farmers have no idea of the proper dose and if told must guess at the weight. As a result they often give enormous overdoses, and poisoning in swine frequently occurs.



Toxic reactions in a group of pigs 48 hours after treatment with phenothiazine

There is not much that can be done for the poisoned animals other than to keep them out of the sunshine and perhaps give them a cathartic. Except where the poisoning is extreme, nearly all cases, so handled, will recover. If they are left exposed to hot sunshine most of them will die.

Acetonemia a Symptom

Acetonemia in the dairy cow is merely a symptom of some ailment that is disturbing the metabolic processes. When the basic ailment is relieved, the acetonemia disappears. More often than not the seat of the trouble is in the liver. Sugar usually ameliorates the acetonemia because glycogen shields the liver from injury and enables it to recover its functions. It is the best treatment we have for hepatitis. If the acetonemia be due to metritis or indigestion and fasting or cobalt deficiency, or vitamin A deficiency, or vitamin B deficiency (not rare in sows), the treatment is obvious—relieve the basic ailment.—W. C. GLENNEY.

I give the sulfa drugs intraperitoneally instead of intravenously. I believe it is better for the animal and I know it is sometimes safer for the doctor. How did I learn these important facts? A range steer in the feed lot restrained by nose tongs taught me and quickly. —L. A. DYKSTRA.

Chromic Catgut vs. Cotton Sutures

Stevens and his associates made a carefully controlled study of 100 consecutive surgical cases. Only operations for nonrecurrent inguinal hernias and for clean appendices were included. In 50 cases cotton sutures were used and in 50 fine chromic catgut. The results obtained suggest the clinical superiority of fine chromic catgut over cotton in the closure of clean wounds. Early ambulation is not contingent on the type of suture material used. There was no difference in postoperative pain and temperature following the use of fine chromic and cotton sutures.—*J. Am. Med. Assn.*

Sulfonamides for Pododermatitis

Cases of necrotic pododermatitis in cattle, where neither the coffin nor pastern jount is infected, do well if cleaned thoroughly, all necrotic tissue removed and dressed in antiseptic pack and bandaged along with systemic treatment consisting of two intravenous injections of 30gm of sodium sulfapyridine and 30gm of sodium sulfathiazole in 500cc of distilled water, on successive days. If further sulfa medication is needed, which is seldom, give one-half this dose on the third day.

Penicillin for Large Animals

The price of penicillin is still falling and it may be economical to use it in commercial herds later, but at present its use is justified only in purebred animals. The dose for a cow is 1,500,000 crystal G units in beeswax twice daily.

Penicillin treatment for a single day is of no value (except against the gonococcus). It should be continued until the temperature has been normal for 24 hours, or until it is shown to have no effect on the organism against which it is being employed. Ordinarily treatment is required for three to five days.

Veterinary Problems of the Fur Ranch

By T. T. CHADDOCK, M.S., D.V.M., Grafton, Wisconsin

The Effects of Smelter Smoke on a Fur Ranch

Last year on a visit to a fox ranch on the outskirts of Salt Lake City, Utah, all of the pens and guard fences were found to be in a poor state of repair. The wire fences were corroded until they appeared more like spider web than wires and nearly anywhere could easily be punctured with the fist. It was practically an impossibility to hold an animal under such circumstances. There were several layers of wire on the posts near the ground. On inquiry as to the cause of the corrosion, it was found that the smoke stack of a smelter approximately 10 miles away was the offender. The prevailing westerly winds carried the smoke over the premises almost constantly. The gases from the smelter united chemically with the water of the air to form sulfurous acid which readily attacked the small strands of netting, but had a slower action on the larger strands of stock wire. Nevertheless, some outstanding mutation foxes were raised on the ranch. No ill effects on the foxes or the surrounding vegetation were observable.

In past years smelter smoke has caused considerable damage to both livestock and vegetation in parts of Montana, but this was practically eliminated when the stacks were built higher, so that there was a greater dispersion of the gases, and by other control methods.

Why Norwegian Foxes Excel

At the time that the Nazis invaded Norway there existed throughout the country many thriving fur farms. Dire straits were reached because of the limited food supply. As the result of some of the arguments which ensued with the Nazis, several fur farmers were killed. One returned GI told me of finding a mink ranch with all the animals dead in their pens. This must have happened some time prior to the soldier's visit as the animals were dried up skeletons.

As time went on and food became more and more scarce, a military regulation was enforced which required the fur farmer to dispose of four-fifths of his herd. In other words a man was allowed to keep twenty foxes out of every hundred foxes that he owned. Of course, the Norwegians kept only the best of their breeding stock, those animals having the best of fur quality.

Due to this compulsory reduction of foxes, it can be predicted that furs coming from Norway in the future will be of excellent quality and for that reason will be more desirable than ordinary market furs. The American producer at the present time is placing not only some very outstanding furs on the market, but also some exceptionally poor ones that cannot hope to compete with a product such as Norway will export.

Whalemeat for Fur Animal Food

While on a recent trip into one of the northeastern provinces of Canada, I had an opportunity to observe one of the most ingenious methods of securing a winter's supply of fur animal food. (Incidentally, there was a mink ranch in this isolated portion of the country on which there were 6000 animals.)

A herd of whales were reported to be in a small bay close by where there was much action. All available dories were loaded to the gunwales with stone and proceeded to form a line across the inlet of the bay. At a given signal several stones were heaved over the side from each boat. The entire line of boats again advanced 100 yards toward the end of the bay and the proceeding was repeated. This was done every 100 yards until the end of the bay was quite near.

The stones dropped into the water frightened the whales causing them to dash further into the shallow water or even out onto the sand, where they were shot with rifles or killed with sledge hammers. The adults were 15-20 feet in length, of a light blue or whitish blue color. The calves were of a distinct bluish color.

The blubber was stripped in large pieces by a rendering plant crew, while the rest of the carcass was chopped into pieces to facilitate loading into carts. This was hauled away by oxteam or in horse-drawn French two-wheel carts and outdated motor cars, to the grinding plant where it was later frozen into blocks for fur animal food.

In spite of the deafening noise made by the ever present swarms of seagulls, I examined the inverted teats which were found to be present on each side of the vent. These were very white and practically like those of the cow. I am not familiar with just how these teats are extended enabling the young to nurse, as I had to force them out. The milk was quite thick, but I couldn't force myself to taste it as the stench was terrific, and the appearance anything but inviting.

Veterinary Problems in Poultry Production

By W. R. HINSHAW, D.V.M., Ph.D., Davis, California

Cass and Williams (*J.A.V.M.A.*, 111:282, 1947) have reported the isolation of *Salmonella pullorum* from a wild pheasant. This adds another wild bird to the list of carriers of pullorum disease and will help to explain "breaks" that occur in Pullorum Clean flocks.

Jaquette and Marsden (*Poultry Sci.*, 26:218, 1947) used mapharsen and metachloridine as treatments against blackhead in turkeys and report that they could observe no significant differences between the treated groups and their respective controls, neither in mortality nor the time of death, following treatment.

Turkey growers who live in areas where fowl pox is prevalent during the winter and spring months should be warned by veterinarians that breeding flocks should be revaccinated six or seven months after the initial vaccination to insure protection from the disease during the egg production season. Turkeys vaccinated against fowl pox do not retain the immunity for longer periods. In order to determine if a vaccinated flock has lost its immunity, it is a good plan to vaccinate 50 to 100 birds one week before it is planned to re-vaccinate the entire flock. Unless over half of the trial vaccinated individuals show "takes," indicating a loss of immunity, revaccination of the flock should be postponed until a later date.

Veterinarians who seldom think of taking temperatures of birds as an aid in making a diagnosis will find it helpful in making many decisions. It requires little added effort. The following diseases of birds always cause a rise in body temperature from 2° to 4° F.: fowl cholera, fowl typhoid, swine erysipelas, and spirochetosis. An example of a disease which causes a definite decrease in body temperature is hexamitiasis of turkeys. In this disease, the temperature begins to drop as soon as infection is established and at the crisis it is from 2° to 3° F. below normal. Examples of diseases in which little if any change in temperature has been noted are: coccidiosis, lymphomatosis, fowl coryza, tuberculosis, and blackhead. The normal temperatures of a few avian species are as follows: chicken, 105 to 107° F.; turkey, 104 to 106° F.; duck, 106 to 109° F.; goose, 104 to 106° F.; pheasant, 106 to 111° F.; and pigeon, 106 to 109° F.

Sulfonamides are of value in reducing losses from Salmonella infections (including pullorum disease) of birds, if they are given early in an outbreak.

Edwards, West and Bruner (Kentucky Agr. Exp. Sta. Bul., 499, 1947) have described a new group of bacteria designated by them as "The Arizona Group of Paracolon Bacteria." These are serologically related to the Salmonella and are capable of producing disease in animals including birds. The cultures studied were isolated from fowls, swine, man, rodents, reptiles and egg powder.

Hudson (*Poultry Science*, 26:192, 1947) has reported several cases of *Aspergillus fumigatus* infection in the eyes of baby chicks. These were in chicks from 10 days to three weeks of age, and the lungs as well as the eyes were involved. The disease was characterized by the formation of a yellow cheesy pellet beneath the nictitating membrane causing the eye lids to bulge. The cornea was not visibly affected and seldom were both eyes infected. Contaminated litter was given as the possible source of the fungus.

Spirochetosis in Turkeys

Until Hoffman, Jackson and Rucker (*J.A.V.M.A.*, 109:329, 1946), reported an outbreak of spirochetosis in turkeys in California, the disease was not known to exist in North America. Since then Burroughs (Science, 105:577, 1947) has reported a case of the disease in a fowl which was used for feeding fowl ticks (*Argas persicus*) obtained from a poultry flock in Texas. No vector was demonstrated in the California outbreak. Burroughs' findings would indicate that the disease is prevalent in Texas even though no report has been previously made of its existence. In all probability it also exists in other fowl tick infected areas.

Veterinarians should be looking for this disease in both turkeys and chickens especially in areas where the fowl tick is prevalent. Research work now in progress at the University of California indicates that the methods of treatment and control used in other parts of the world will prove effective if the disease becomes prevalent in this country. These include the use of arsenicals and penicillin. Vaccines also are used in other countries, where the disease is one of the major causes of losses in fowls.

Endocrine Therapy in Veterinary Medicine*

THE use of hormones in veterinary medicine has not progressed as far or as satisfactorily as has the use of these products in human medicine. The reason, at least in part is there are two common diseases of man in which the victim must take hormones to live; and that is a compelling reason for taking them. These diseases are diabetes mellitus and Addison's disease. Further the manner of the discovery of insulin and its spectacular effect in diabetic patients has received an enormous amount of publicity and has builded faith of the general public in hormone therapy. In addition to all this, countless thousands of persons take thyroid substances daily.

Thus in human medicine we have three common, widespread, easily diagnosed diseases in which hormones are definitely, and in two of the ailments dramatically, helpful to the afflicted person. By contrast the successful use of hormone in veterinary medicine is almost, but not quite, confined to the treatment of ailments of the reproductive system. For these disorders we lack for the most part a specific diagnosis. For example we may know an animal doesn't come in heat or doesn't ovulate or does both and doesn't conceive and in many cases that is about all we know about her. We lack the fundamental physiological knowledge to determine specifically what is wrong. In many cases we don't know exactly what a hormone does and in a greater number we don't know how it does it. Thus hormone therapy as it applies to the reproductive system of animals, is to a considerable extent on a trial and error basis.

The anterior lobe of the pituitary produces 12 to 14 hormones. Of them, the gonadotropic hormones, are essential for the function of the ovary and testis. It consists of two fractions, a follicle stimulating fraction (FSH) and a luteinizing fraction (LH).

Rich sources of this gonadotropic hormone are pregnant mares' urine, the urine of pregnant women and human placenta. The hormone obtained from the urine of pregnant mares is referred to as equine gonadotropin. In it the FSH fraction predominates. It frequently doesn't do much for the male in actual clinical use but may stimulate the development of the testes and the production of spermatozoa. The gonadotropic hormone obtained from the urine of pregnant women and from human placenta is referred to as chorionic hormone. In it the LH fraction predominates. It is helpful in bringing about ovulation if follicles are present and is frequently very successful in the correction of cystic ovaries and nymphomania.

On the whole the use of these hormones to improve the fertility of farm animals, by inducing estrus, or the number or quality of spermatozoa, or libido, etc., have not been satisfactory enough to warrant routine use.

The natural products are expensive, generally too expensive, for use in treating ordinary farm animals. However, synthetic substances have been developed that closely resemble the natural female and male sex hormones and the thyroid hormone which regulates metabolism. There are a number of ailments or abnormal conditions for which these synthetic hormones, or hormone like, compounds prove corrective in the majority of animals, but individual animals vary in their response to a degree that makes prognosis somewhat uncertain. For example, diethylstilbestrol the female-like sex hormone is quite dependable in emptying the uterus, when used in cases of pyometra. It is less successful in causing expulsion of the decidua in cases of retained afterbirth. Or, to cite another example of variation, it will induce estrus in the mare, ewe, sow and bitch in two to three days with a fairly high degree of regularity, but it is less dependable in bringing about ovulation and of course without ovulation conception does not occur and the induction of heat is rendered useless.

Other uses for diethylstilbestrol include expulsion of a mummified fetus, in which it acts with almost the same certainty as in pyometra, and in incontinence in bitches following spaying. Large doses of diethylstilbestrol cause ovarian cysts to develop quite uniformly, but small doses are the most satisfactory treatment for that condition that we have. Still another use is stimulation of milk production without the intervention of pregnancy. For this purpose it is necessary to give the drug over a prolonged period and then it is successful in rather fewer than 50% of the cases.

Testosterone is a synthetic testicular-like hormone. It resembles in action the hormone produced by the interstitial or Leydig cells of the testis, the hormone responsible for development of male characteristics. Testosterone is useful to stimulate libido in impotent males. It has little or no effect on the production of spermatozoa or on any other cause of infertility than lack of sexual desire.

The posterior lobe of the pituitary body produces two hormones (1) oxytocin (pitocin)

*Notes from a discussion by Professor F. N. Andrews, Purdue University, at 35th Annual Short Course for Veterinarians, Purdue University, October 1, 2 and 3, 1947.

and vasopressin (pitressin). Both stimulate the contraction of involuntary muscular fibers; the first of the reproductive organs the second of the blood vessels.

Oxytocin is useful to stimulate contraction in an inactive or tired uterus. It should not be used until the cervix is dilated, otherwise rupture of the uterus may occur, the portents of which are grave indeed. It is the best available agent to induce post-partum contraction of the uterus and to stop post-partum hemorrhage.

It is often useful in agalactia in sows. Its action in such cases is not one of stimulating milk production but by contracting the muscular fibers surrounding the acini and tubules in the mammary gland to force the milk already produced down into the milk cisterns and teats. The same phenomenon that occurs when a cow "lets down" her milk. The trouble in such sows is a nervous one. They do not want to own their pigs. The hormone forces the milk out of the recesses of the gland to a part where the pigs can get it. Then if they are permitted to nurse the act stimulates further milk production which in turn increases the desire of the sow to be nursed and the physiological cycle is established.

In addition to the foregoing therapeutic uses of hormones, various experiments have been conducted to increase the production of meat, milk and eggs and to improve the quality of the product. Thus diethylstilbestrol given to broilers will produce a better broiler than can be produced in any other way. The method of choice for giving it is to deposit a pellet containing 10 to 15mg of the drug beneath the skin of the neck near the head of broilers six to eight weeks of age. It is necessary to deposit the pellet well forward in the neck to comply with the regulations of the Food and Drug Administration. This location is chosen so that if any portion of the pellet is not absorbed by the time the broiler is dressed the pellet will go into the offal with the head.

The use of diethylstilbestrol to increase the amount and improve the distribution of fat in broilers appears to possess considerable economic possibilities. The same compound is used to a less extent to improve the fattening quality and tenderize the flesh of old roosters. This practice is not well established and there are conflicting reports as to its value. Perhaps one should say that about 50% of the old breeding cocks given pellets of diethylstilbestrol subcutaneously will fatten like young birds and their flesh will be tender enough for frying. They should be marketed just about four weeks after they are given the synthetic hormone; if held longer the treatment should be repeated.

Various attempts have been made to employ the gonadotropic hormone to increase the production rate in animals, particularly in valuable animals. It was theorized that by increasing the number of follicles that ripen in the ovary, it might be possible to obtain twins or triplets from uniparous animals. It was possible to increase the number of ova liberated at a single estrus in the cow to 12 or even more, and occasionally to fertilize all of them, but embryonic development is frequently abnormal.

In sheep the number of ripening follicles can be increased up to 50 but normal fetuses usually do not develop.

Attempts have been made to induce animals to reproduce more frequently and at seasons more desirable, by giving them gonadotropic hormones, for example to breed ewes in hot weather. Estrus and ovulation have been induced but the conception rate is too low to make the plan economical.

In sows, Cole and Hart of California report striking success under experimental conditions. By giving them 1000 I.U. equine gonadotropin between the 39th and 68th days after farrowing they were able to induce heat in sows in 3 to 7 days. Of 27 sows so treated 26 came into heat. Of 23 mated 20 conceived and produced litters of good size.

Another synthetic hormonal substance, thyroprotein, may possess economic as well as therapeutic possibilities. It is made by mixing iodine and defatted milk under favorable pH and temperature conditions. The resulting compound has an action much like that of thyroxin, a hormone produced by the thyroid gland. It will increase the metabolism and milk production in dairy cows. After the cow has passed the peak of milk production and is on the way down, the production may be upped somewhat and sustained for some time by giving thyroprotein. Cows being given protonone,* require additional feed or they will lose weight rapidly.

The difference between a lard hog and a bacon hog or between a beef cow and a dairy cow may be, to a considerable extent, a difference in thyroid activity. Sometimes lard is in demand as during the war and since, sometimes there is an over supply as was the case before the war. It takes time for the swine raiser to adjust his production to the demand when he must change breeds to go from a lard hog to a bacon hog. The possibility that thyroid activity may effect the rate of growth of fat and lean and efficiency of feed utilization are now being investigated at the Indiana, Illinois, Missouri, Michigan and other experiment stations.

*Protonone is a proprietary name for thyroprotein.

Recent Developments in Sulfonamide Therapy*

IT is difficult to evaluate new developments in the fields of veterinary diagnosis prophylaxis and therapy; in fact impossible at the time of their introduction. When in 1893 tuberculin was tested experimentally in Pennsylvania and Wisconsin and two herds were tested by New York practitioners (at Rochester and Poughkeepsie) no one could possibly foresee that the time would come when American veterinarians would test more than 25 million cattle in a single year or that within little more than one-half a century more than four million tuberculous animals would be removed from our herds through its use. When a few years later mallein was introduced to the veterinary profession of the United States who could have been farsighted enough to envision the creation of the office of state veterinarian in one-half the states and eradication of a major plague of the horse as a result? When in 1898, Dr. W. L. Williams described the Schmidt treatment of milk fever at the U.S.V.M.A. meeting in Omaha, it attracted little attention; yet over the years its influence on the development of the dairy industry was incalculable. When the hog cholera virus and antiserum vaccine was introduced it was generally supposed that it would be used only by the swine raiser. Few veterinarians could see themselves vaccinating hogs, yet swine vaccination has made more work for veterinarians than has the use of all other biological agents combined, and it revolutionized the swine industry in this country. One might mention other new products that have had far reaching effects on the veterinary profession and profoundly influenced our animal industry—blackleg vaccine, tetanus antiserum, Strain 19 vaccine, etc.—but none other in the beginning held the promise of the sulfonamides or were so quickly adopted. By 1946 the production of these drugs had reached the astounding total of 2646 tons. The future of chemotherapy is probably as unforeseen now as was the future of the tuberculin test or blackleg vaccination when it was introduced.

The first of the sulfonamides made available to veterinarians in this country was prontosil, a sulfanilamide preparation suitable for intravenous injection. This was quickly followed by sulfanilamide powder, crystals and tablets. Because the relatively low price made it practicable to use sulfanilamide for farm animals and because of its wide range of usefulness it attained great popularity in a short period and is still largely used although of recent years it is being gradually replaced by more effective sulfa compounds.

During the 10 eventful years since the introduction of sulfanilamide a large number of sulfonamides have been produced by organic chemists but only a few have attained any considerable acceptance by American veterinarians. For one reason or another—high price, scarcity, toxicity, limited application—the remainder have failed to attain popularity in the veterinary field.

Sulfapyridine was one of the first to follow sulfanilamide. It possesses some advantages over the older drug and some disadvantages. It is more slowly eliminated and less frequent dosage is required, however, its toxicity is greater and on that account many veterinarians have hesitated to give it for more than a day. The available supply has been inadequate much of the time and this has limited its use.

Judging from the literature sulfapyridine is superior to other agents in the treatment of enzootic pneumonia of calves and calf diphtheria. Until recently this sulfonamide was in a class by itself in the treatment of foot rot in cattle. According to reports of clinicians a large majority of the cases of infectious pododermatitis can be cured by a single intravenous injection of sodium sulfapyridine—60gm in 500cc of distilled water.

Because of the known toxicity of sulfapyridine, some veterinarians when the need for it extended over more than one day gave a mixture composed of 50% sulfapyridine and 50% sulfathiazole on the second and third days of treatment. This appeared to work well and led to a combination of other sulfonamides when a large dose of sulfa drug is indicated. A commercial preparation containing sodium sulfapyridine and sodium sulfathiazole in sterile solution is available now.

Sulfathiazole is one of the sulfonamide compounds that was early brought to the attention of veterinarians. It possesses the advantages of low toxicity, superior effectiveness again Staphylococcus infections and wide usefulness in farm animals, including poultry, and in pets. As an ointment for local and ocular application it has attained greater popularity than any other of the sulfonamides. The disadvantages are: It is eliminated even more rapidly than sulfanilamide and more frequent doses are required and the price is much higher than that of sulfanilamide.

Still newer in the veterinary field is a group, synthesized in the laboratories of Sharp and

*Notes from a discussion by S. F. Scheidy, Glenolden, Pa., at the 28th annual Illinois Veterinary Conference at the University of Illinois, Oct. 6-9, 1947.

Dohme—sulfadiazine, sulfamerazine and sulfamethazine.

Of this group, often referred to as the sulfapyrimidine compounds, sulfadiazine has attained little popularity among veterinarians. It became available early in the war and because it was very acceptable for the treatment of ailments in army personnel, little or none was available for the use of veterinarians until after they had, in the main, lost interest in it. At all events, clinicians have reported that sulfadiazine is effective in the treatment of pneumonia in calves and in the prevention and treatment of cecal coccidiosis in chicks.

Sulfamerazine is at present the most popular of the sulfa drugs, in the veterinary field. It possesses definite advantages over every other sulfonamide except perhaps sulfamethazine the newest of these compounds. Its toxicity is lower than that of the earlier compounds, and the dose required to maintain an effective blood serum level is smaller. The greatest advantage of sulfamerazine for veterinary use, however, is the slow elimination of it. Experiments have shown that a single dose of 0.75 grain per pound of body weight maintains an effective serum level for 24 hours. Further, it may be given in the feed and the soluble sodium salt is readily taken in the drinking water.

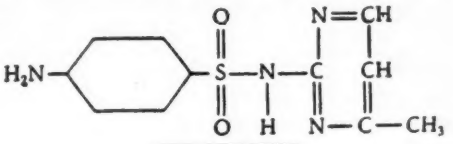
Sulfamerazine is superior to sulfadiazine for the prevention and cure of cecal coccidiosis in chicks, as effective as sulfapyridine in the treatment of foot rot in cattle, preferable to sulfathiazole in the treatment of pneumonia, effective in the treatment of influenza in horses and so one might continue over the whole list of sulfonamide compounds used for systemic effect.

Sulfamethazine the newest of these compounds is much like sulfamerazine in action. It is not known to possess any advantages over it.

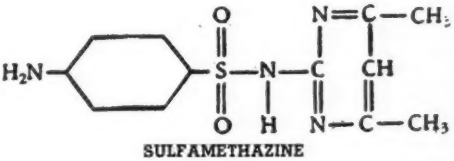
A sulfonamide compound still in the experimental stage is sulfaquinoxaline. It remains in the blood for days after a single dose either orally or intravenously. It causes a hypoprothrombinemia in laboratory animals. This toxicity can be counteracted by giving vitamin K with it. Sulfaquinoxaline may possess therapeutic possibilities of a high order, but as yet further research into its pharmacologic characteristics are needed.

There is a group of sulfonamide compounds that are insoluble or nearly so in the intestinal tract. They are much used in enteric conditions where a local, rather a systemic effect is desired. Sulfaguanidine is the oldest of these preparations. Sulfathalidine (phthalylsulfathiazole) followed it and in turn was followed by sulfasuxidine (succinolsulfathiazole). The action of all three is pretty much the same. Sulfaguanidine, being the oldest is best known. It is only slightly absorbed from the intestine and is therefore practically non-toxic. It has been reported to be beneficial in the prevention and treatment of coccidiosis in chickens, calves and swine.

These non-absorbable sulfonamide compounds are widely useful in the treatment of bacterial infections of the intestine. It should be remembered, however, that they antagonize



SULFAMERAZINE



SULFAMETHAZINE

the normal as well as the pathogenic intestinal flora and should not be used indiscriminately, nor continued unduly long.

Some general principles in the use of sulfonamide compounds and upon which success in their employment depends are:

Adequate and proper dosage should be employed in order to obtain maximal results with the sulfonamides. In general, the initial oral dose should be equal to the total daily requirement as determined on the basis of the body weight of the patient. Subsequent dosage and time intervals for administration are dependent on the pharmacologic characteristics of the drug.

Aqueous solutions of the sodium salts of most sulfonamides are satisfactory for intravenous and possibly for intraperitoneal administration. They are ideal for obtaining, promptly, high blood concentrations.

Three- to five-day treatment with sulfonamides is usually sufficient to bring about marked clinical improvement in most responsive cases.

Adequate water supply should be provided for all patients receiving sulfonamide therapy, especially when compounds are used that are absorbed readily from the gastrointestinal tract.

If infections fail to respond to sulfonamide therapy within a few days, when the compounds are administered in adequate dosage, they should be discontinued and other treatment should be instituted.

Income Tax Savers

By HAROLD J. ASHE*
Compton, California

WHILE taxpayers continue under a heavy burden of taxes, with no relief in sight against this year, at least some taxpayers may help themselves while awaiting action by Congress. Relief, in many instances, may be had by the simple device of taking more time and care in the collection of all information necessary for the preparation of the individual income tax return. I would not emphasize this save only for the fact that I have witnessed too many taxpayers take infinite pains to earn $100 or so, then approach the problem of making an income tax return involving hundreds or thousands of dollars in taxes with casual indifference—at least until they see what the tax bill adds up to.

It is the writer's firm conviction that if the average professional man and small businessman would hang out a sign "closed to compute income tax" for a week, he would make more money through tax savings than if he continued as usual during that period, though such drastic action is not necessary. Many a taxpayer too poor to give $100 to worthy charities nevertheless ponies up $200 or $300 or even more in overpayment of taxes because he "can't find time" to do a thorough job of making a tax return which truly reflects his financial circumstances and earnings. Yet, such oversights on the taxpayer's part may represent as much net income as he may make by hard work and careful management in a month.

With 1947 income taxes taking $19 of every $100 of taxable income, even in the lowest tax bracket, it simply means that of every $100 in overlooked business expense, or personal deductions, to which the taxpayer is rightfully entitled by law, he is penalized at least $19. Even a $19 tax saving should warrant more than haphazard application in making an income tax return. Failure to make such saving in tax payment as the law provides is the taxpayer's own fault. The government is under no obligation to make out his income tax return. In fact could not do so except the taxpayer supplied it with the information.

Moreover, and this escapes the attention of most taxpayers, overlooked professional or business expenses and personal deductions take the tax applicable to the highest bracket any part of the taxable income is in. That is, if the taxpayer has an income of $6.500 subject to tax, and he has neglected to report $500 of expenses, which fact makes his taxable income $6,500 instead of $6,000, that additional income carries a tax rate of $28.50 on the $100. The oversight costs him $142.50 (see accompanying table for tax rates).

WHAT EVERY $100 OF UNREPORTED BUSINESS EXPENSE COSTS THE TAXPAYER IN ADDITIONAL INCOME TAXES, BASED ON 1947 RATES

If taxpayer's income subject to tax is:	Additional Income Tax per $100 Unreported Business Expense
Up to $2,000	$19.00
Over $2,000, but not over $4,000	20.90
Over $4,000, but not over $6,000	24.70
Over $6,000, but not over $8,000	28.50
Over $8,000, but not over $10,000	32.30
Over $10,000, but not over $12,000	36.10
Over $12,000, but not over $14,000	40.85
Over $14,000, but not over $16,000	44.65
Over $16,000, but not over $18,000	47.50
Over $18,000, but not over $20,000	50.35
Over $20,000, but not over $22,000	53.20
Over $22,000, but not over $26,000	56.05

And increasing at the rate of $2.85 for each additional higher tax bracket.

Assuming that most professional men are now sufficiently versed in the purely mechanical problem of making income tax returns, it is not the purpose of this article to review that aspect of the subject. Rather it is the intention to stress certain finer points as they apply to small businesses and average practices of professional men, to indicate certain tax-saving methods which, if employed, may materially reduce the income tax paid on a given income, just as such tax-saving methods have been employed for years by most taxpayers in upper tax brackets.

Partly because of labor and material shortages, most business men throughout the war deferred making needed repairs and improvements to their business properties. This applies equally to the veterinarian's office or hospital and to all the equipment used in his practice. From here on I shall refer to the financial side of a veterinarian's practice as his business for in the view of the tax collector that is what it is. In normal times such expenditures would have been made as a matter of course, and the cost would have been reflected in income tax returns. Failure to make needed improvements and repairs has cost taxpayers dearly in increased income taxes, odd as this may seem.

Illustration: A taxpayer's business property is badly in need of painting. It should have been painted in 1946; it is still unpainted in

*Tax counselor. The article by Mr. Ashe, "Your Income Tax May Be Too High," in the January, 1946, issue of *Veterinary Medicine*, page 30, should be re-read in conjunction with this one.

1947. His income subject to tax is $2,500 in 1947, after all exemptions and personal deductions. His tax is $484.50. If he had painted his property in 1947 at a cost of $250, his income subject to tax would have been reduced by that amount, and his tax would have been $432 25, or a tax saving of $52.25. Stated another way, the net cost of the paint job would have been only $197.75. In addition, no doubt, he sustained additional losses by reason of accelerated depreciation of his property due to neglect, as well as loss of business because his property is becoming rundown and dingy.

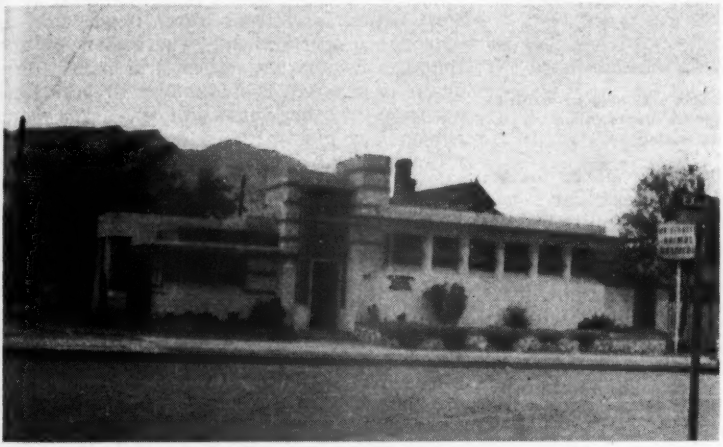
Another Illustration: Other improvements, such as additions to buildings, new fronts, etc., unlike painting may not be written off in the year made, but must be written off through their normal life as depreciation. Here, too, tax savings on a more modest annual scale may be made, but aggregating large total savings over the life of the improvements. If such improvements are justified, taxwise it is folly to continue postponing them.

Already tax rates have been materially reduced, and small reductions may be forthcoming in 1948, so that the tax-saving value of needed improvements and maintenance is greater now than it will be in years to come. Moreover, most taxpayers are probably in higher tax brackets now than they are likely to be four or five years hence.

Reverting to painting to illustrate. This job, which effects a tax saving of $52.25 in 1947 (on taxable income in the second tax bracket), would have resulted in a $62.50 tax saving if it had been done in 1945 before tax structures were scaled down. In future years, if tax rates drop further, even less will be saved in taxes by such a paint job. Moreover, even if tax rates are not changed, if the taxpayer has the work done now while he is in, say, the $8,000 bracket, such a $250 paint job will save $71.25. If he defers it until, say, 1949, when he will be in, let us say, $4,000 tax bracket, he will save only $52.25 in taxes, even if tax rates are not scaled down.

New equipment and fixtures, cars, etc., with a shorter useful life than building improvements will result in relatively greater yearly tax savings. This aside from greater profits resulting from such installation of equipment.

As depreciation represents a very substantial part of the cost of doing business, and as many taxpayers fail to take any depreciation whatsoever, or forget depreciation on certain items, taxpayers should deliberately take time to prepare an inventory of every last item that is subject to depreciation, regardless of its character or relative value. Numerous small items will aggregate in value as much as a major item. Such inventory should show the date acquired, its value at time of acquisition, rate of depreciation, amount of annual depreciation. In addition to providing that all rightful depreciation will be reflected in the income tax return, such an inventory will prove invaluable in the event of a fire involving an insurance adjustment. A duplicate copy of the inventory should be kept off the business premises, so that if a fire occurs a copy is available.



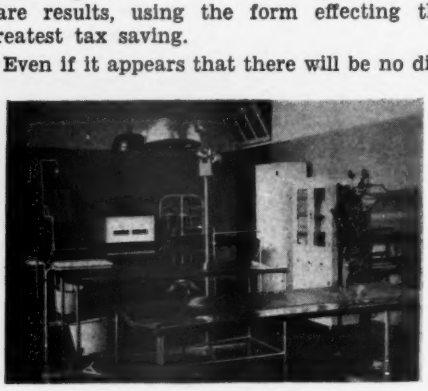
Although the cost of decorating comes high, considerable savings may be had in income tax if a veterinarian has his painting done while taxes and income are high

While individual income tax returns provide for a separation of business expenses and personal deductions, the latter may have as profound an effect in determining the tax finally computed as the former. Both business expenses and personal deductions determine the owner's net take-home compensation from his business.

Thus, the question of whether to use the short form, which allows a standard credit for personal deductions, or to use the long form and report the deductions, should not be

dismissed without careful thought. The wrong decision costs millions of taxpayers additional taxes every year. If in doubt, the taxpayer should figure his return both ways and compare results, using the form effecting the greatest tax saving.

Even if it appears that there will be no difference in income tax by using either form, the taxpayer may still save considerable by using the long form, provided he anticipates the situation before year-end. Circumstances frequently arise in which the taxpayer, owing personal bills which are of a tax deductible character if paid, may be presented with a choice of paying such bills before December 31, or of deferring payment until the new year. This, of course, calls for a snap accounting prior to year-end, but it may pay off handsomely.



The cost of new equipment and fixtures may be written off through their normal life as depreciation at a worthwhile tax saving

What is here said of the long form versus the short form is equally applicable where the taxpayer, because his income is in excess of $5,000, must use the long form. In that case he has a choice of reporting his personal deductions, or taking the standard deduction in lieu of reporting.

Illustration: A taxpayer owes a medical bill of $500 which he plans to pay in 1948. He has already paid medical bills during the year to the amount of 5% of his income (the first 5% not being deductible) so that if the $500 bill is paid it will be fully deductible. Further checking shows that, if this bill is not paid in 1947, his tax will be approximately the same either by the long or short form. However, by paying this $500 before the year ends, personal deductions then exceed by this $500 the standard 10% allowed in the short form. Even in the lowest tax bracket, payment of this bill before year-end will effect a $95 income tax saving. This has the effect of reducing the bill to $405. The same rule applies to other items of personal deduction character which the taxpayer may elect to pay by year-end, instead of deferring.

Conversely, where payment of such items may not result in any savings the taxpayer may elect to defer payment of the bills and use the short form with its standard allowance for personal deductions. If he anticipates heavy personal deductions in the following year such bills, if payment is postponed until that year, may result in considerable tax savings in that year.

Thus, while only one day may separate possible payment dates (December 31 or January 1 of the following year) the determination of which year to honor such bills may effect considerable tax savings or tax losses, as the taxpayer elects.

Other deductions of a personal character frequently overlooked include loss from accident, storm, hurricane, fire, flood, etc., to personal property, usually forgotten by the time the income tax return is prepared. Here again it will pay the taxpayer to take time out from his other duties and review the year's personal events with the idea of recapturing forgotten facts of a tax-saving character. Was his wife's fur coat stolen last February? Did a storm rip off the garage roof? Did a flood ruin personal property stored in the cellar?

Such deductions, of course, may be taken only to the extent not covered by insurance. Losses sustained by theft of either cash or property are deductible, if not recovered through insurance. Also, such losses enumerated above are frequently ignored in computing schedules in the tax return, due to oversight.

Herewith is a check list of certain items frequently overlooked:

Membership fees in professional and business associations, including Chamber of Commerce;

Expenses, including travel, hotel and meals, attending professional or trade conventions;

Subscriptions to professional magazines;

Cost of smocks or gowns or coveralls (but not regular clothes used for work), if not adapted to ordinary wear; also laundering of them.

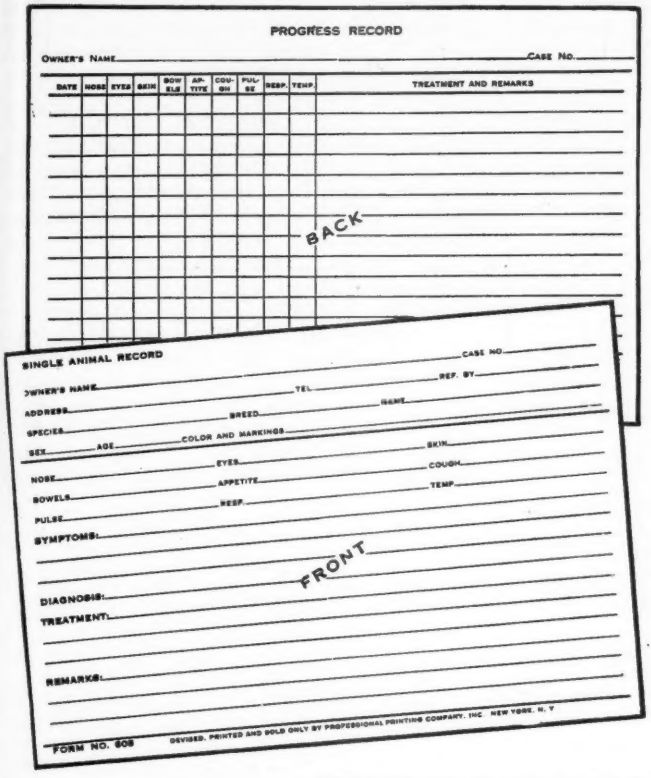
Above all else, no hard and fast rules may be made that apply to all taxpayers in all circumstances. Presented certain alternatives and choices, what a given taxpayer should do, is as individual as each individual's income tax return. The purpose of this article is to point out that taxpayers, by becoming income tax conscious as a year-around state of mind, will be able to meet certain situations and make certain decisions with tax-saving considerations in mind and may, therefore, without violating the tax code, make material tax savings for themselves not only this year, but every year hereafter.

Small Animal Hospital Records

By TOM EVANS, D.V.M.
Albuquerque, New Mexico

THE veterinarian or small animal hospital using efficient history record forms, and proper financial office records, eliminates a great many misunderstandings, worries, unnecessary work, and actual money losses. During the past dozen years, especially since the inception of Social Security and Withholding taxes, veterinarians have become more and more record conscious. It is believed that to illustrate and describe a number of record forms which veterinarians or small animal hospitals can use without change and to their great advantage will be helpful to beginners and perhaps to some others. Only in rare instances is it necessary to use special, and consequently more expensive record forms. The record forms shown here, constitute a complete coverage for the history record keeping, and for the account record keeping of the ordinary practice. The financial end of all practices, including daily earnings, expenditures, analysis of expenditures, bank balances, profit and loss statements, balance sheets, etc., represent a separate and distinct part of veterinarians' records. These are not dealt with in this article.

Fig. 1



The first and most essential record in a veterinarian's office is the Single Animal Record form, Fig. 1. The top of the front form contains the owner's name, address, etc., and a description of the animal. The remainder of the front of the form records the examination, symptoms, diagnosis, treatment, and other pertinent information. On the back of this form, a history of subsequent treatments is kept; on the right is shown charges, credits and the current balance. This card is 5"x8" in size, and is filed in standard 5x8 card files. It is printed on a white index card stock that is both durable and strong. For those who prefer or are already using a 4"x6" card file, this form is available in that size also but

Fig. 2

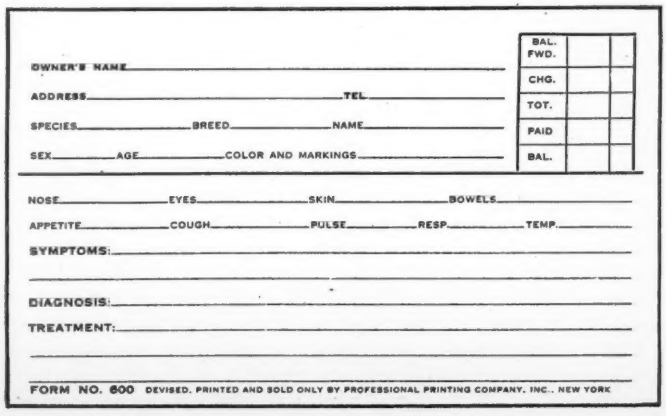


Fig. 3

SERVICE MEMORANDUM OF
DR. ALVIN M. JONES, VETERINARIAN
15 EAST 22ND STREET
NEW YORK, N. Y.

Animal _____ Date _____

Diagnosis _____

CHARACTER OF SERVICE	CHARGES		CREDITS	
Call or Mileage				
Services				
Surgery ☐ Obstetrics ☐				
Medicine, etc. used				
Medicine, etc. left				
VACCINATION; Bacterins ☐				
Serum No.				
Virus No.				
TOTAL				

Remarks: _____

Owner's Signature _____

Address _____ Rec'd Payment _____

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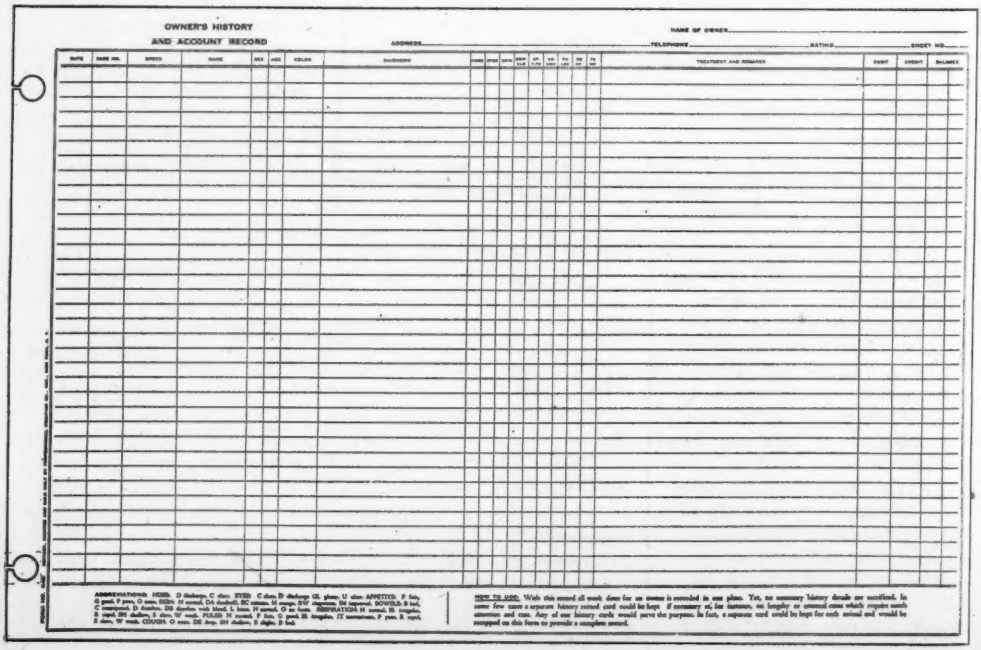
minus the account record on the back because of lack of space.

Supplementing these two forms are two very helpful little slips. The first of these is the Daily Visit Slip, Fig. 2. This slip may be used either in the veterinarian's office or when he is making an outside call.

Later it is used as a posting medium to the Single Animal Record form. Some veterinarians use this little slip as their complete Single Animal Record, but that is hardly advisable, as this slip is, necessarily, not complete in itself. When this slip is used, the little boxes in the upper right corner should be utilized. The "BAL FWD" is the current balance owed the veterinarian, as shown on the Single Animal Record form. The "CHG," or charge, represents the amount debited for the present visit. The remainder of the items in the little boxes are self-explanatory. These figures are later transferred to the Single Animal Record form (Fig. 1). The use of the Daily Visit Slip will eliminate misunderstandings and errors, which are bound to occur when one relies solely upon one's memory.

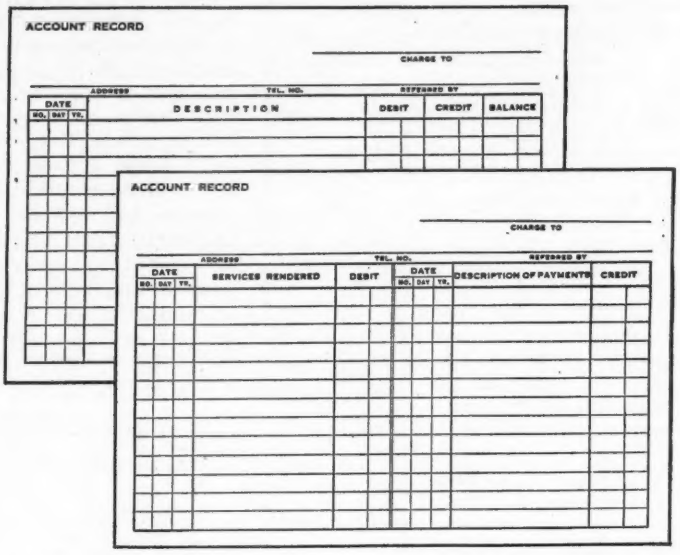
The second slip is the Service Memorandum, Fig. 3. It makes possible a complete record of each outside call. From this, entries are made on the Single Animal Record form, thus serving the same purpose as the Daily Visit Slip. However, this form is made in duplicate, and in books of fifty sets. The original is perforated

Fig. 4


OWNER'S HISTORY
AND ACCOUNT RECORD
NAME OF OWNER
ADDRESS
TELEPHONE
RATING
SHEET NO.
DATE
CASE NO.
BREED
NAME
SEX
AGE
COLOR
DIAGNOSIS
TEMP
PULSE
RESP
TREATMENT AND REMARKS
DEBIT
CREDIT
BALANCE
HOW TO USE: With this record all work done for an owner is recorded in one place. Yet, no necessary history details are sacrificed. In some few cases a separate history record card could be kept if necessary or, for instance, on lengthy or criminal cases which require much attention and care. Any of our history cards would serve the purpose. In fact, a separate card could be kept for each animal and would be recopied on this form to provide a complete record.

to tear out and is intended for the owner of the animal. The duplicate remains in the book and becomes the posting medium. The original gives the animal owner the details of the visit and also acquaints him with cost of the visit. It also constitutes a receipt for any payment. Obviously, the owner's signature on this service memorandum should be optional with doctor.

Fig. 7



Also supplementing the Single Animal Record form is the owner's History and Account Record, Fig. 4. When a number of animals are

Fig. 5

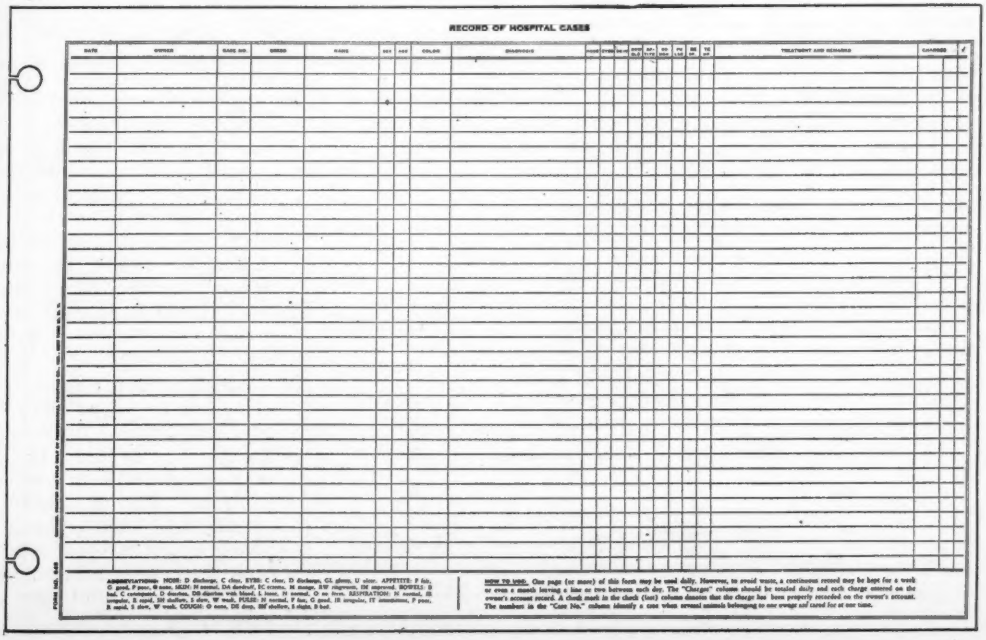

RECORD OF HOSPITAL CASES
DATE
OWNER
NAME NO.
BREED
NAME
SEX
AGE
COLOR
DIAGNOSIS
TEMP
PULSE
RESP
WT
TREATMENT AND REMARKS
DISPOSED
ABBREVIATIONS: NOSE: D discharge, C clear, EYES: C clear, D discharge, Cl. glaze, U ulcer. APPETITE: F fair, G good, P poor, 0 none. SKIN: N normal, DA dandruff, EC eczema, M mange, RW ringworm, INF ingrowth. BOWELS: D bad, C constipated, D diarrhea, DB diarrhea with blood, L loose, N normal, O no feces. RESPIRATION: N normal, H irregular, S rapid, SH shallow, L slow, W weak. PULSE: N normal, F fast, G good, IR irregular, IT intermittent, P poor, R rapid, S slow, W weak. COUGH: O none, DE deep, SH shallow, S slight, S bad.
HOW TO USE: One page (or more) of this form may be used daily. However, to avoid waste, a continuous record may be kept for a week or even a month leaving a line or two between each day. The "Charges" column should be totaled daily and each charge entered on the owner's account record. A check mark in the check (last) column denotes that the charge has been properly recorded on the owner's account. The numbers in the "Case No." column identify a case when several animals belonging to one owner are cared for at one time.

Fig. 6

HOSPITAL WORK SLIP

OWNER_____ CASE NO._____

BREED_____ NAME_____ SEX_____ AGE_____ COLOR_____

WORK TO BE DONE:_____

REMARKS:_____

PROMISED:_____

WORK DONE BY_____

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treated for the same owner it is usually unnecessary to keep a Single Animal Record card for each animal. With this owner's record form it is possible to record the treatment of any number of animals for a single owner including the pertinent facts about each animal, such as date, breed, name, sex, age, color, diagnosis, details of examination, treatment and remarks and last but not least, the details of charges and payments. A sheet is devoted to each client and is headed with his name, address, etc. A list of abbreviations is printed on each sheet to simplify the veterinarian's work. When desirable, the Single Animal Record form may be used for any individual animal, supplementary to this form. An excellent feature of this form is the fact that the complete detail of the account record of any client is contained on this one sheet. This form may be procured in a size of 11x17 inches to fit in a standard 11x17 inch, post binder which will hold any number of these sheets. The form itself is printed on both sides of the sheet.

In animal hospitals the form headed "Record of Hospital Cases," Fig. 5, is practically indispensable. On this record, the details of the handling of animals may be noted *as the cases occur*. Each line of this record provides the following data: Date, owner, case No., breed, name, sex, age, color, diagnosis, details of examination, treatment, and remarks, and also the charges for the treatment. From this record charges are posted to the Account Record Cards of the owner of the animal. The account card will be described later. When necessary, as in the case of the Owner's History and Account Record, the Single Animal form (Fig. 1) may be used as supplementary to this record form. In conjunction with this form the Hospital Work Slip, Fig. 6, is a necessity. One of these little slips should be made out for each treatment, operation, or other work done in a hospital. It should be signed by the person performing the work. From it entries are made to the Record of Hospital Cases (Fig. 5).

Fig. 9

CERTIFICATE OF RABIES VACCINATION

This is to certify THAT I HAVE VACCINATED AGAINST RABIES THE DOG DESCRIBED BELOW.

OWNED BY_____

ADDRESS_____ PHONE_____

BREED_____ NAME_____ AGE_____

SEX_____ COLOR & MARKINGS_____ TAG NO._____

DATE_____ SIGNED_____

VETERINARIAN

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Fig. 8

THE A. M. JONES SMALL ANIMAL HOSPITAL

A. M. JONES, D. V. M., PROPRIETOR

15 EAST 22ND STREET
NEW YORK, N. Y.

TELEPHONE
ALGONQUIN 4-9750

DATE_____ 194__

REPORT ON: (BREED)_____ (NAME)_____

NOSE_____ EYES_____ SKIN_____

BOWELS_____ APPETITE_____ COUGH_____

PULSE_____ RESPIRATION_____ TEMPERATURE_____

REMARKS:_____

NOTE: THIS REPORT IS A RECAPITULATION FROM THE DAILY HOSPITAL CHART

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Where accounts must, of necessity, be kept separate from the animal histories, the Account Record, Fig. 7, may be used. This is a conventional type of account record card and is available in both the 5x8 and 4x6 inch sizes. It is printed on both sides on a white index card stock.

The Post Card Notification, Fig. 8, is a fine good-will builder, which keeps owners informed on the conditions, progress, etc., of their animals.

Fig. 10

CERTIFICATE OF SPAYING

This is to certify THAT ON_____ 194__

I_____ A LICENSED VETERINARIAN,

AND PRACTICING AS SUCH IN THE COUNTY OF_____

CITY OF_____ STATE OF_____

HAVE SPAYED (NAME)_____ (BREED)_____

OWNED BY_____

ADDRESS_____

SIGNED_____

VETERINARIAN

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There are a number of other available record forms, already printed, for the use of veterinarians, which are of a definite help and which may be used. The Certificate of Rabies Vaccination, Fig. 9, should be given to an animal owner after every vaccination. The Certificate of Spaying, Fig. 10, should be furnished to every owner after a spaying operation. The Euthanasia Record, Fig. 11, is one which every veterinarian should have signed before an animal is destroyed. A Release Form, Fig. 12, which is a sensible method of protection against unscrupulous owners, should always be used.

As previously mentioned, besides the above record forms, every veterinarian should be equipped with a good bookkeeping system to keep him informed of the financial status of his practice at all times. There are several such systems and one of them will be described in a forthcoming issue.

The record forms* shown in the foregoing are, considering completeness, convenience and low cost, as desirable as any forms with which I am acquainted. Veterinarians with a large, well-established practice may prefer forms printed to their own specifications. Such forms of course will cost a great deal more than the stock forms here shown which, to my way of thinking, serve adequately for the ordinary practice.

Fig. 11

EUTHANASIA RECORD

Date_____ Case #_____

Owner's Name_____

Street_____ City_____ Phone_____

Description of Animal: Breed_____

Sex_____ Age_____ Name"_____"

Color and Markings_____

I, the undersigned, do hereby certify that I am the owner (duly authorized agent for the owner) of the animal described above; that I do hereby give

Doctor_____

his agents, servants, and representatives full and complete authority to destroy the said animal in whatever manner the said Doctor_____ his agents, servants, or representatives shall deem fit; and I do hereby and by these presents forever release the said Doctor_____ his agents, servants, or representatives from any and all liability for so destroying the said animal.

I do also certify that the said animal has not bitten any person or animal during the last fifteen (15) days, and to the best of my knowledge has not been exposed to Rabies.

Unless instructed otherwise, said animal is to be given to the board of health for disposal.

Signed_____

Fig. 12

DR. ALVIN MYLES JONES
VETERINARIAN
15 EAST 22nd STREET
NEW YORK, N. Y.
ALgonquin 4-9750

RELEASE FORM

_____ 194__

I hereby consent and authorize you to receive, prescribe for, treat or operate upon

You are to use all reasonable precautions against injury, escape or destruction of the animal(s), but you will not be held liable or responsible in any manner whatever, or any circumstances, on account of the care, treatment or safe keeping of the animal(s) above described, or otherwise in connection therewith, as it is thoroughly understood that I assume all risks.

After five days from written notice to remove the animal(s) mailed to the address given below it will be considered abandoned and may be disposed of, or destroyed as you deem best, and it is understood that your so doing does not relieve me from paying all costs of your service and the use of your hospital, including the cost of keeping.

After carefully reading the above, I have signed.

_____
OWNER

_____
ADDRESS

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Animal Husbandry on Palestine's New Farms

By CAPT. ERIC HARDY, F.Z.S.
Liverpool, England

WHEN my father visited the Holy Land something more than 20 years ago the Palestinian farmer and his animals had changed little from Biblical times. Flocks of fat-tailed sheep and black, nubian goats, that differed no whit from those of the Chaldean shepherd of old, grazed the scant spring pasturage of the hills. They were watched by Bedouin goatherds in their sheepskin clothes, who looked as though they might have stepped out of the Old Testament pictures. The coming of the summer drought necessitated the slaughtering of the remaining thin, Arab cattle, identical to those that Jacob tended for Laban. In any case their milk yield was too poor to be of any consequence. Much of that type of animal husbandry may be seen in Palestine today, but there is also a new Palestine, with a new agriculture, introduced from the west. During the past two years, it has been my privilege and good fortune to visit many of the new Jewish settlements and agricultural schools, to stay awhile at some and to take an agricultural course at another, and to see the new animal husbandry and the modern farming that is rapidly becoming a feature of the agriculture of Palestine.

Mules are largely used for transport and draft by the Jewish farmers

The many new Jewish agricultural settlements are responsible for these changes. Consider their cattle, for example. These European settlers coming with up-to-date technical training in the science of livestock breeding and animal management found, not only that the native Syrian cow of the Arab was unproductive and unsuited to their intensive system of agriculture, but that the European breeds were too delicate for Palestine's hot summer droughts. A hardier strain has, therefore, been developed by crossing Holstein-Friesian bulls with Syrian cows. I saw a particularly fine herd of these cross-bred Holstein-Friesians when I visited Kiryeth Anavim settlement, a dry, hill farm below Jerusalem, where the Russian methods of artificial insemination are practiced. Another good herd was visited at the settlement of Givet Brenner on the sandy coastal plain not far from Rehovot. Others are to be seen at Degania in southern Galilee. Kirgeth Anavim, the Russian Jewish settlement, whose name means the "valley of the Grapes," is an example of the peculiar problems of dry hill farming on the stony, eroded Jerusalem limestone hills, where there is a seven or eight-month drought each summer. Here I found that the problems of summer fodder which had defeated the Arab hill-farmers for thousands of years, were overcome by sweet corn grown on the plain, and surplus "damaged" (unsuitable for export) citrus

fruits, like jaffa oranges. They grow their fodder on a separate 50-acre settlement, several miles away on the coastal plain. This farm on the hot plain gives them seven cuts of "hay" a year, as they do not permit the sweet corn to set ears before cutting for fodder.

On two occasions I took educational parties over the Kiryeth Anavim settlement with a Jewish agricultural friend, particularly to see their pedigreed Friesian stock. The stud bull, used to supply semen for artificial insemination, was imported from Holland before the war. The cows are milked three times a day, by hand in preference to mechanical means; the average milk yield being five gallons a day although some of the cows give 10 gallons soon after calving. The cow byre is a concrete building with metal roof and tubular steel stalls, for winter is not really cold here. At the time of my visit the cattle were being fed a mixture of dry spent hops and chopped carob or locust beans which are very sugary and are an age-old fodder plant of the Near East. This was augmented later by the green tops of sweet corn mown for hay. On another occasion, in spring, the herd was being fed upon waste oranges and grapefruit, sliced by a special cutting machine, and the fruit and peel, each cow eating 150 oranges or grapefruits a day. These are mostly fruits too small or too large for the export trade. The farm also uses waste orange peel in its silo.

The historic Arab cow of the country, little altered, as has been mentioned, since Biblical times, has no grazing from January to June. I saw this beast at most of the Arab hill villages. A small, bristly cow, brown or black, very lean, with poorly-developed udder and muscles, long and heavy-headed with medium curved horns, very small limbs and a narrow chest. She is only about 3.5 feet tall at the shoulders and yields only 400-700 liters of milk a year, with a lactation period of only four or five months. She is grazed on the fallow fields and mountain slopes in the brief and sparse spring vegetation, and upon the dry stubble straw after harvest. During the winter her diet is threshed straw. Her diseases are few. The Arab cow serves mainly as a draft animal pulling the fellaheen's ploughs. Her meat is tough and of little value. There is a better fed and larger strain of Arab cattle called the Beirut. They are usually brown with a darker head and the cows give up to 2,000 liters of milk per year. This strain requires special Egyptian clover or alfalfa and beet cultivation to maintain its production.

The new Palestine farm of the settlements does not rely upon the traditional donkey labor of the Middle East. Mules are widely used for Jewish wagon transport and farm work. On the hot sandy settlements of the plain, I noticed the peasants hosed their mules and horses at midday and evening to cool them off, before coming into the dining hall for their own meals. Karakul sheep-breeding for export is a new industry. Palestine has the only pedigreed flock in the East. Light horse breeding is a new industry carried on at the settlement of Givath-Haim in the northern part of the coastal plain. As the ploughing on many hill farms is light surface ploughing, horses and mules are often used; but on the heavy plain farms, caterpillar tractors are common.

Poultry farming is also practiced on modern

One settlement kept 20,000 white leghorns

lines, in place of the Biblical Arab breeds, which required little attention and yielded less in return. The heat problem in summer is acute with poultry farming. At Kiryeth Anavim a White Leghorn-Light Sussex cross of German origin is reared by intensive methods in wooden houses raised off the ground. Its egg yield the first year averages 174. The cross is preferred for meat. I also saw there a flock of White Wyandottes with an average lay of 162 eggs, and the workers were experimenting with a black Australope cross. The settlement of Givet Grenner, with its 1,000 adults and 400 children, kept 20,000 birds—White Leghorns. The poultry industry of Palestine was threatened with extinction by an outbreak of pneumoencephalitis in 1945-46, but was saved by a vaccine developed by Palestinian veterinarians.

The veterinary service for the settlement farms is excellent. Their Jewish veterinarians are amongst the best-qualified from Europe, and in Tel Aviv they have their veterinary association with its own scientific journal. There are facilities for instruction and research at the University at Jerusalem and at the Jewish Agency research station. The Palestine Government has a veterinary staff which works chiefly with the Arab farms.

Hints on Bovine Surgery*

IN any discussion of surgery in cattle some mention of anesthesia should be made. Formerly the impression prevailed generally that cattle are poor anesthetic risks and it still persists in the minds of some veterinarians, with a result that it is often neglected. In most operations restraint and relaxation are essential to good surgery and to neglect anesthesia not only inflicts unnecessary pain on the animals and creates an unfavorable impression upon the owner and onlookers, but it increases the work of the surgeon and the hazard to both him and the animal operated upon. More unfailingly it lowers the quality of the operation, lengthens the period of convalescence and impairs the results.

The facts are, cattle are as amenable as other animals to local and regional anesthesia, nerve blocking and general anesthesia.

Among the inhalation anesthetics only chloroform need be considered. Usually it is not the anesthetic of choice where operations must be performed on the farm without the assistance of a skilled anesthetist. For operations in the hospital with skilled assistance available, chloroform anesthesia is as satisfactory on the properly prepared cow or bull as it is for other animals and, in fact, is often the anesthetic of choice for cattle.

As in equine surgery, chloral hydrate has come into routine use in bovine surgery on the farm and elsewhere if there is no occasion to remove the animal from the surgical amphitheater immediately after the operation. Ordinarily chloral hydrate is combined with one-half the quantity of magnesium sulfate. For surgical anesthesia, which is profound anesthesia, the combination at the rate of one ounce of chloral to one-half ounce of magnesium sulfate is rather safer and all around more satisfactory than chloral alone.

The combination of chloral hydrate, magnesium sulfate and sodium pentobarbital recommended by Millenbruck possesses the advantage of quicker recovery from the anesthesia and, at present prices, does not add too greatly to the expense for use on animals. However, it is not necessary to use as much of the pentobarbital sodium in cattle as Millenbruck advocates for horses. Combined at the rate of one ounce of chloral, one-half ounce of magnesium sulfate and 60 grains of sodium pentobarbital to 16 ounces of distilled water and injected intravenously at the rate of one ounce per minute until surgical anesthesia is attained, this combination produces a satisfactory anesthesia lasting about 40 minutes. If a longer anesthesia is desired a second injection of a smaller amount will be required in about 30 minutes.

Epidural anesthesia is the most generally useful anesthesia for cattle. By varying the amount of the anesthetic solution injected the tail, pelvic organs, udder and the uterus in turn can be anesthetized. In a cow of average size 50cc of 2% procaine will suffice for cesarean section. Epidural anesthesia has the disadvantage that it may render the animal incapable of standing, when more than about 20cc are given.

Paralumbar anesthesia is a remarkably fine anesthesia for operations on the abdominal viscera. A disadvantage is the distortion it causes in the muscles of the flank region making them difficult to approximate for suturing after the operation.

Nerve blocking is preferable to infiltration anesthesia wherever it is applicable. It possesses the advantage of not interfering with the field of operation. To block sensation in large nerve trunks may require up to a 5% solution of procaine. For small nerves 2% is strong enough.

Umbilical Hernia

Umbilical hernia is usually a hereditary condition and should not be operated upon to fit the animal for show or breeding. However, in the case of hernia, dairymen often insist upon an operation in order to veal the animal or to save it for milk production if it is from a high producing family.

It is best not to operate on these cases before the calves are four months of age as the abdominal wall is too thin and weak in the young calf to constitute a desirable foundation for repair of Nature's omission. On the contrary the operation should not be delayed till the animal is more than six months of age because the increasing weight of the abdominal contents makes repair more difficult after that age.

Sodium pentobarbital anesthesia is a desirable one for this operation. From the fundus of the hernia sac, remove an elliptical section of skin of a size dependent upon the size of the hernial sac, and break down the adhesions around the abdominal opening. If possible the sac should be pushed back into the abdomen without opening it. If this can't be done open it and replace the intestine and omentum in the abdomen and suture. In suturing, the muscles should be brought across the opening, lapped over one another and sutured securely with stainless steel wire sutures, placed well

*Notes from an address by Dr. A. G. Danks at the 28th Annual Veterinary Conference, University of Illinois, Oct. 6 to 9, 1947.

back from the margins. The abdominal fascia should then be carefully drawn over the muscles and sutured with absorbent material. Lastly the skin is sutured with cotton, nylon, or similar strong material, and the wound covered with collodian.

Case of unbilical hernia in which the contents of the hernia sac have been forced back into the abdomen preparatory to operation. Such cases should be operated upon at four to six months of age

It is important to the success of the operation that the calf be kept on a restricted diet of concentrates for two or three weeks following the operation. If it is allowed to eat its fill of grass or hay the sutured tissues may give way from the pressure and the hernia will then recur as large as before and more difficult of repair.

Occasionally one finds cases where the conditions are unfavorable to recovery and it is deemed necessary to have more scar tissue than results from the foregoing operation to strengthen the covering of the hernial opening. In such cases an irritant pack, such as gauze impregnated with thymol iodide, can be placed between the sutured muscles and the skin. The pack should be changed daily for 10 days, an opening at one end of the skin incision having been left for this purpose. In such cases it is well to suture the muscles with tape instead of buried wire sutures. It is advisable to leave the ends of the tape sutures quite long to facilitate removal of the sutures when packing the wound is discontinued.

Enucleation of the Eye

This is an operation that is indicated frequently in cattle practice. Either general anesthesia or local infiltration with a suitable local anesthetic is indicated. If the eye is suppurating, suture of the eyelids before enucleation is desirable, otherwise the eyelids may be grasped near the margins with forceps and held during the operation.

Care should be exercised to remove all the conjunctiva and the eyeball and attached muscles. The best aseptic technic practicable under the circumstances should be employed. If conditions for asepsis are ideal the wound may be sutured for healing by first intention, but if the operation is performed in the open or in any place where the wound cannot be protected from dust and if the control of hemorrhage is not complete, the wound should be packed and when the remaining portion of the eyelids are sutured, an opening should be left at the medial canthus for removal of the packing and drainage.

Self Sucking Cows

Some cows acquire the habit of sucking themselves or other members of the herd. Mechanical contrivances for preventing it are either ineffective or interfere with normal functions of the animal, such as grazing, eating from a manger, fighting flies, lying in a restful position, etc. Two operations on the tongue for this vice are in common use, (1) insertion of two hogrings in the ventral surface of the tongue; one at the junction of the frenum and the other three inches anterior to the first, and (2) removal of a portion of the tongue.

The hogrings will break the habit in a majority of cows and appear not to interfere with eating. It is probably best to give them a trial in all cases. Local anesthesia is adequate for inserting them.

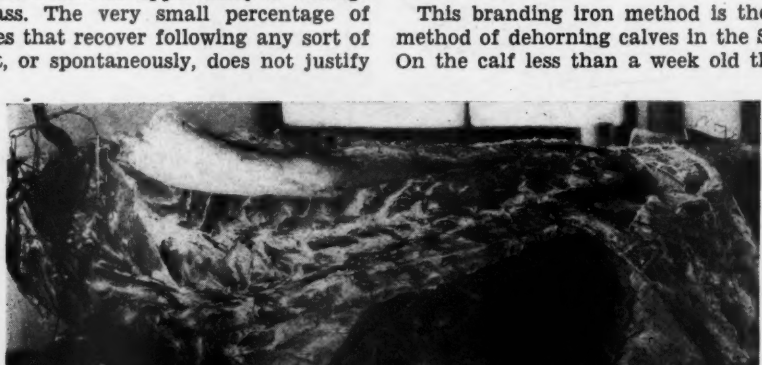
If the hogring treatment fails, one-half of the tongue from the tip back for five inches should be removed. This does not interfere with eating or drinking and the speaker has known of but a single case in which it failed to cure the habit.

To remove a section, first crease the tongue down the center with the emasculatome from the tip back for five inches, then clamp down at the base of the section to be removed. Then divide along the crease with scissor and suture the mucous membranes of the upper and lower surfaces together. Infiltration anesthesia is satisfactory for this operation.

The use of the emasculatome does much to arrest the hemorrhage which otherwise is profuse and annoying following removal of the tourniquet.

Traumatic Pericarditis

Supplying a worthwhile service to the owner of an animal affected with traumatic pericarditis, consists in making an early diagnosis, while there is still an opportunity to salvage the carcass. The very small percentage of these cases that recover following any sort of treatment, or spontaneously, does not justify an expectant attitude. Drainage of the pericardial sac with or without resection of a rib is in the same category as other treatment—almost universally unsuccessful, and never justified by the prospects of recovery. Furthermore, resection of a rib is an extremely distressing operation for the animal, since respiration is greatly interfered with for a considerable period. In this ailment the pathological process usually has progressed to an irreversible stage before it is discovered.



A case of traumatic pericarditis in which two-thirds of the thoracic cavity was occupied by the enormously distended pericardium. In such cases and nearly all others the pathological process is irreversible

Dehorning

Dairymen commonly prevent the growth of horns by the use of caustic chemicals, but they sometimes fail to apply them until the calf is too old to avoid at least some development of the horn. Veterinarians called upon to remedy this neglect commonly remove the horn with a gouge.

A better plan is to burn the horns off with a sort of branding iron of which three sizes are necessary for horns of different sizes. With the branding iron, horn can be removed in calves up to four months of age. The iron is heated as for branding and set over the horn, burning a ring all around the base. It leaves a black dry wound and in time the horn drops off leaving a healed surface and a well shaped head. Local anesthesia is adequate for this operation.

This branding iron method is the common method of dehorning calves in the Southwest. On the calf less than a week old the ring of the branding iron is no larger than a dime and is placed directly over the born bud.

Cesarean Section

Cesarean section is a useful operation. It is of considerable economic importance, since when properly employed it may be the means of saving valuable animals that can be salvaged in no other way. It is not a last resort to be tried after everything else has failed. Used in that way it will fail in most cases. It should be employed only upon cows that are in good condition and strong with relatively undamaged genital tracts.

The veterinarian upon undertaking delivery in a case of difficult parturition should make a thorough examination of the animal and with a history of the case make an estimate of the situation and decide upon a plan of procedure. If the decision is to attempt delivery by the natural route that plan should be followed consistently. It is a mistake, if that plan fails, to then deliver the fetus by cesarean section.

If the decision, upon examination, is to employ cesarean section the operation should

proceed without other attempts at delivery or delay for any reason.

Two sites of operation are available for cesarean section—the right flank and a ventral site a few inches on either side of the linea alba.

The flank operation may be performed with the cow either standing or lying. The former is more convenient for the operator and better asepsis can be maintained in the standing position.

Epidural and local anesthesia may be used. It is important to estimate carefully the amount of solution to be injected into the spinal canal if the standing operation is planned. It is embarrassing to have the animal give way in her hind legs and go down during the operation. The operation itself involves no unusual technic.

Traumatic Gastritis

Surgery is the only satisfactory treatment for traumatic gastritis in cattle. Standing the animals with the shoulders considerably higher than the rear will ameliorate many of these cases, temporarily, but most of them soon suffer a relapse.

The operation is a simple one. The left flank should be prepared as for any aseptic operation. The critical part of the technic is preventing the escape of rumen contents into the peritoneal cavity. A good way to assure this is to suture the skin margins securely to the rumen before the latter is incised. Make an adequate incision through the abdominal wall down to the rumen. It should be eight to 10 inches long. Then suture the skin to the rumen all around the incision leaving exposed an elliptical section of the rumen three inches wide and seven or eight inches long. The sutures should be short and drawn taut around the lower half of the incision. This plan is much better than having several assistants hold rumen out of the skin wound with forceps.

Pododermatitis

Dairy cattle, and beef cattle also, suffer much from foot rot. The organism that predominates in all these cases is the *Actinomyces necrophorus*. There is much doubt, however, that it is the primary factor; the general belief being that some other organism, possibly a virus, first invades the tissues and lowers their resistance permitting the *A. necrophorus* to establish an infection.

The new therapy of foot rot, by giving the animal a single intravenous dose of sodium sulfapyridine or possibly sulfamerizine, does not eliminate the need for surgery. The ailing foot should be cleaned thoroughly and all necrotic tissue removed, carefully. The hoof should be trimmed and the foot bandaged. If it is swollen and painful an antiphlogistic pack should be kept on it for 48 hours, changing the pack at 12-hour intervals.

Where either the coffin or the pastern joint is infected a more extensive operation is necessary. If the coffin joint be infected the claw should be sawed off just below the top line of the hoof. If the pastern joint is infected the amputation should be through the middle of the first phalanx.

Adequate anesthesia for these operations may be obtained by blocking the digital or plantar nerve as is done in the horse, and in addition infiltrating the skin with procaine just above the site selected for the amputation.

After the operation the foot should be bandaged firmly and the bandage coated with tar or the foot may be put in a bag made of waterproof material.

In walking, cattle show little effect from the amputation of a claw

If the foot has been well cleaned and disinfected and the operative technic good, the bandage may be left *in situ* for 10 days to two weeks. Acute pain, or elevation of the temperature or refusal to rest the foot on the ground are indications for change of the bandage. When the bandage is changed after a week or longer it is usually advisable to apply some astringent to the granulating surface to check its growth and facilitate healing. A saturated solution of potassium permanganate is satisfactory for this purpose.

Most cattle walk quite well after the amputation of a claw. They are able to get about for grazing and to keep up with the herd. Even heavy bulls—1600 pounds and upwards—are able to serve a cow without difficulty, after amputation of a claw from a hind foot.

Brucellosis Control in New York State

By E. V. MOORE*
Albany, New York

FEW realize the value of the farm products produced in New York State. The farm income in New York last year was about $680 million, of which 69% was furnished by the livestock industry. Livestock diseases cause great losses to this major section of farm income. Untold millions of dollars have been lost by breeders and milk producers of this state by reason of brucellosis in our dairy herds. I realize the important part brucellosis plays in the economic life of our dairymen.

When I came to Albany in 1943, the $64 question confronting our Bureau of Animal Industry was how to handle the brucellosis problem. At that time, there were two basic methods of control—test and slaughter, and calf vaccination. The test-and-slaughter method is idealistic. Perhaps it may be workable where the incidence of infection is low, the cattle population small, and the movement of livestock limited. However, the slaughtering of reactors to the blood test is not the answer to the brucellosis problem in New York. Brucellosis control by the same extreme measures used under the tuberculin-testing program is not economically sound, nor is it necessary. Nearly a million cattle in New York have been slaughtered on account of tuberculosis. They cost the State nearly 60 million dollars, beside the millions paid by the federal government and by the counties of the state.

A study of the federal records of the number of animals slaughtered in herds under the test-and-slaughter plan shows the economic hazard in maintaining brucellosis-free herds under this method. We did not have enough surplus cattle so that great numbers could be eliminated to maintain brucellosis-free dairy herds. Even had we the animals to spare, it is gravely doubtful that we could have obtained the funds to pay indemnities. We decided that we could not afford to eliminate great numbers of animals from our dairy herds, thereby drastically curtailing milk production and perhaps ruining thousands of dairymen financially. Before becoming associated with the New York State Department of Agriculture and Markets, I was convinced from my clinical experience of 25 years in general veterinary practice that vaccination with Brucella Strain 19 is a valuable weapon in the control of brucellosis.

We called together many representative breeders and agricultural and veterinary leaders of our state with the hope of formulating a workable vaccination program. It was the opinion of this group that any successful plan must be adaptable to any type of herd. The ultimate goal of this program is to build up clean vaccinated herds. A clean vaccinated herd is a herd in which all unvaccinated animals and all vaccinated animals over two years of age have passed a negative blood test.

Our Plan B (vaccination without a herd blood test) was instituted to fit the needs of commercial dairymen and to build up great reservoirs of vaccinated cattle in order to protect the milk supply, and also to furnish replacements for vaccinated herds—not because of lack of confidence in the blood test. In fact, at the present time the blood test is the only means I know of for determining whether brucellosis exists in a herd. Vaccination with Brucella Strain 19 has proved to be a valuable weapon in the control of brucellosis. While the immunity secured from calf vaccination is not a cure-all, the resistance developed in the individual animal has been beneficial. The protection, of course, depends in part on the exposure to which the vaccinated animal is sub-

We could not afford to ruin, financially, thousands of dairymen by continuing test and slaughter

*Assistant Commissioner, New York State Department of Agriculture and Markets.

jected. We should protect our animals both by vaccine and by avoiding exposure.

One of the cardinal precautions in a calf-vaccination program is to be sure that the vaccine, when used, contains a sufficient number of live organisms. To safeguard our plan, the laboratory of our Bureau of Animal Industry rechecks the potency of the Brucella vaccine it furnishes for official vaccination.

Since the inauguration of our calf-vaccination program it has been requested by more

We have demonstrated the clinical value of our brucellosis-control program by building up a large supply of vaccinated animals. This has greatly lessened the storms of abortion. Now that we have a reserve supply of vaccinated animals we can concentrate on increasing the number of clean, vaccinated herds, which is the ultimate goal of our program. The task, however, is still a large one which demands hard work and the cooperation of dairymen and veterinarians. The program has

More than one-half of all the unvaccinated, brucellosis-free herds in New York State on January 1, 1944 were reinfected during the following 15 months. That satiated the yen to slaughter productive dairy cows. Now more than one-half of all calves raised in New York are vaccinated now and by 1948, 75% will be vaccinated. It is not a coincidence that brucellosis storms are much less common now than they were a few years ago, and becoming rarer

than 46,000 herd owners; and we have vaccinated more than 500,000 calves. We are now vaccinating more than one-half of all the calves being raised annually in New York State. In the 12 months ending July 1st this year 152,000 calves were vaccinated; during the calendar year 1947 more than 170,000 calves will have been officially vaccinated. Veterinarians and breeders generally are agreed that storms of brucellosis are much less common now than they were a few years ago. This is not a happenstance. Public health authorities tell us that if 60% of the human family are vaccinated it will bring an epidemic under control—the chain of transmission has been broken. Now that we have a large percentage of the cattle in our breeding and milk-producing herds vaccinated, it is only logical that we should see definite results. In most cases, Plan B herds that have been routinely vaccinated for from three to five years are found, when blood tested, to be nearly free from brucellosis. The few remaining reactors usually are the older members of the herd and are expendable.

not been dramatic but the results are becoming impressive, and we are confident the job can be done. It is not necessary to live with brucellosis under our vaccination plan. We are looking forward to the day when all the cattle in this state will be in clean vaccinated herds. The number of clean vaccinated herds will be tripled during 1947, and we expect, that at the end of 1948 we will have twice as many clean herds as will exist at the end of 1947.

We of the Department are interested in building up clean herds that will *stay* clean. There are two reasons why our clean vaccinated herds should stay clean—the individual animals have protection, and the cycle of transmission of the disease has been broken. The New York calf vaccination program has its casualties, but it is still our best defense against brucellosis. The only unchanging thing in the world is change. If scientific research and practical experience can demonstrate a better way of handling brucellosis control, we are ready to grasp it. Until that time, my advice to the livestock owners is to follow the New York calf-vaccination program.

Suipestifer Infection of Swine*

Many species or types of Salmonella organisms affect man and domestic animals including birds. Swine are hosts to their full share of this ubiquitous genera.

Salmonella choleraesuis (Bacillus suipestifer) infection occurs in swine in four forms, (1) as a subclinical, usually unrecognized disease, (2) as a chronic debilitating stunting disease localized in the intestine and from which the animal may suffer for months, (3) as an acute disease confined mainly to the gastrointestinal canal and (4) as an acute septicemic disease that develops suddenly, spreads rapidly and is accompanied by a high mortality.

Subclinical Infection

The subclinical or carrier type of *S. choleraesuis* infection is probably more apparent than real. As a herd the animals are certainly not sick and growth and gain may appear to be unimpaired; however, the astute, experienced diagnostician can usually find some individuals in the herd that, if they do not betray the condition, at least justify a suspicion of latent *S. choleraesuis* infection.

The principal importance of the presence of this organism in the intestinal tract of normal swine derives from two circumstances. (1) Under circumstances that depress the vigor of the animal, such as an attack of influenza, extreme exposure, malnutrition, an overfeed of green corn, etc., the benign form of *S. choleraesuis* is prone to don a mantle of pathogenicity and invade the tissues with disastrous result to the animal, and (2) the symbiotic relationship of the hog cholera virus and the suipestifer organism. Whether the presence of the bacterium is conducive to the growth of the virus is not known, but there can be no question that the presence of the virus in the tissues is appallingly favorable to the proliferation of the suipester organism, which, with exception of attacks of cholera too acute to permit development, is present wherever the virus abounds. So constant is this relationship, the bacterium was thought to be the cause of hog cholera for a good many years; hence the name "choleraesuis." This symbiosis persists even when the virus is incapable of causing disease, as in swine vaccinated by the simultaneous serum-virus method. Following such vaccination the *S. choleraesuis* may create havoc—the so-called cholera break. In that lies the chief importance of subclinical *S. choleraesuis* infection.

*Notes from discussions at recent veterinary meetings.

Acute Septicemic Suipestifer Infection

The acute septicemic form of suipestifer infection usually occurs on premises where the chronic type has existed for one or more years.

Symptoms.—Sudden deaths are common. Some animals continue to eat after becoming sick but the appetite may be diminished. There is more alertness and less depression than in hog cholera, in this respect simulating swine erysipelas. Sick animals are more easily aroused and roam about when they get up, contrasting in this respect with cholera infected animals, which, upon walking a short distance, want to lie down. The eyes are clear; the lids not gummed. There is weakness, but less staggering and knuckling than in hog cholera. Usually very little coughing or abnormal bowel passages are noted at the onset. Temperatures vary from 104° to 108° F.

Necropsy.—Post-mortem examination reveals extensive septicemic lesions, that is, profuse hemorrhages on all organs and membranes. This profusion of septicemic findings is helpful in distinguishing this disease from hog cholera, in recently immunized herds. In cholera-susceptible droves no attempt should be made to eliminate hog cholera—it cannot be done. There is usually an ominously extensive gastritis; the gastric mucosa exhibiting a beef-steak red appearance, with, at times, various stages of ulceration. The mucosa of the cecum and colon, likewise, shows extensive inflammation, edema and ulceration. The spleen is usually enlarged, pulpy and of a purplish hue. This type of spleen is not always found, but when present it is characteristic. For this reason necropsies should always be held on a number, not just one animal. In fact, it is the rule in swine practice, violated only for good reason, not to confine autopsies to a single animal, because of the variance of findings in different subjects. In this particular disease it is a good plan to hold an autopsy on a number of subjects that have died as well as those sacrificed for the purpose. Animals that have died may have lived long enough to develop some diphtheritic membranes, which are indicative of Salmonella infection of longer standing. Diarrhea and other symptoms of infectious enteritis are prone to develop in affected herds.

Control.—Control measures include strict sanitation, proper diet, intestinal medication and porcine mixed bacterins. More detailed control measures are outlined in the following.

Infectious Gastroenteritis

Infectious gastroenteritis is another acute disease, caused primarily by the organism *S. choleraesuis* but it is not so extremely acute, at the onset, as the septicemic form described in the foregoing.

Symptoms.—The first symptom is diarrhea, with mucus and shreds of mucous membrane in the feces. Temperatures vary from normal to 108° F. There may be sudden death losses. The eyes are bright, and the lids not gummed. Animals are alert and most of them jump up when aroused. The appetite may be normal, diminished, or in complete abeyance; but usually animals continue to eat to some extent after getting sick. There is rapid loss of weight from dehydration, especially in animals that have a profuse diarrhea. It may affect animals of any age.

Necropsy.—An autopsy may reveal generalized septicemic lesions or the lesions may be confined to the gastrointestinal tract. The stomach may be full or partially filled with food. There is usually a gastritis; the mucosa varying from a blush to a beefsteak red in color. The mucosa of the cecum and colon exhibits extensive inflammation and thickening, with diphtheritic membrane formation and sometimes ulceration. The small intestine is affected in rare instances. In animals that exhibit generalized septicemic lesions, one will often find an enlarged, pulpy and purplish spleen.

Control.—Control measures consist chiefly in sanitation to reduce the intake of the infection. Moving the animals to clean ground is a good procedure in mild weather. The apparently well portion of the drove should be moved and the sick animals segregated. Moving the sick animals to a clean place will also aid materially in the success of the treatment. At times all treatment is futile unless the sick animals are moved. In other words, moving is indicated for the entire drove but the sick should be separated from the well. The greater the range, the better, because this spreads the infection thinner and reduces the degree of reinfection. In mild weather simply run the pigs out on a clover or alfalfa field, put up a shade for them and keep them away from the old yards and buildings where the disease germs are harbored.

Sometimes, confining the drove to a concrete floor and keeping this floor scrupulously clean is sufficient to control the intake of infection. The desideratum here is to induce the caretaker to keep the floor clean enough; scrubbing it with a solution of lye, 1:1000 (one 13-oz. can of lye to 10 gallons of water), two or three times daily is necessary to hold reinfection to a tolerable level.

Turning small shotes into the cornfields during late summer and early fall is often an effective and practicable control measure. The corn is not harmed by the pigs and the ground, having been cultivated all season, does not harbor pathogenic organisms. The corn usually provides enough shade but if it does not, shade should be provided. The drove should be kept from the old yards and buildings and cared for right out in the cornfield.

In severely cold weather sanitary procedures are greatly hampered and ofttimes very little can be done to control the infection; however, if the ground is covered with snow it is less dangerous.

Corn should be withheld from the ration. Oats, middlings, shorts and buttermilk are all recommended. Many of the pharmaceutical preparations on the market are beneficial if strict sanitation and proper diet are observed. Replenishing of intracellular and extracellular salts and minerals are helpful in controlling dehydration. A high vitamin-high calcium ration is recommended.

Infectious gastroenteritis is a typical filth-borne disease. The McLean County method of swine raising is the best preventive. It consists in rotating the hog lots the same as grain and forage crops are rotated. The old yards should be plowed and sowed to some grain crop for one or two seasons.

Gilts kept over from infected droves may remain carriers and transmit the disease to their offspring, even though the pigs are farrowed on clean ground.

Necrotic Enteritis

Necrotic enteritis is thought by many to be a chronic form of infectious gastroenteritis, described in the foregoing. It usually affects pigs from weaning to a weight of 125 pounds.

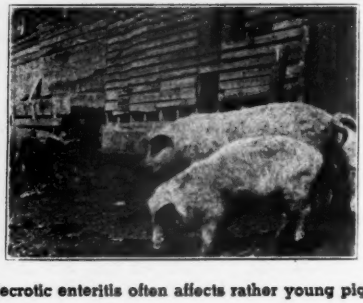
Symptoms.—This disease is still less acute than either of the preceding and the affected animals are more active and alert than is the case in acute gastroenteritis. The appetite may be relatively good. A common expression of the owner is "they eat their heads off." Diarrhea is profuse. There is constant loss of body weight; the affected animals getting thinner and thinner. Some may show improvement. The course of the disease is several weeks or longer. Of course, during all this time the bacteriological picture may become very complex.

Necropsy.—At autopsy lesions are found chiefly in the cecum and colon, which are extensively thickened and contain great quantities of necrotic or caseated material. The lungs may show a chronic bilateral pneumonia. A gastritis is often noted.

Control.—Control measures are the same as

those outlined for acute infectious gastroenteritis.

Treatment.—According to some investigators, the administration of niacin is beneficial. Pig pellagra is closely associated with this disease, no doubt. A ration rich in vitamins is indicated in all forms of enteritis. The loss



Necrotic enteritis often affects rather young pigs

of vitamins in such conditions must be material and the intake is partially or wholly suspended. The wheat products mentioned, as well as yeast, probably owe their beneficial action in part at least to their vitamin B content. Some veterinarians have reported beneficial results from putting the affected animals on a diet rich in animal protein.

Swine Dysentery or Infectious Hemorrhagic Enteritis

Swine dysentery is an acute infectious disease of swine, of perhaps uncertain etiology. The same organisms are isolated from cases of this disease as from infectious gastroenteritis, according to investigators, but they are not able to reproduce the bloody type of enteritis with the organisms isolated. Doyle, however, has reproduced it with a filtrate of the bowel content. The collaboration of a virus in the production of hemorrhagic enteritis of swine is therefore suspected, if not, in fact, conclusively proved. Virus enteritis will be a welcome change in name.

Symptoms.—This disease is characterized by bloody diarrhea, in which the feces contains gross red blood, mucus and sometimes particles of croupous exudate. At times quantities of practically free blood are passed.

The onset of swine dysentery is very rapid. Diarrhea is an early symptom. The feces are usually very dark at first and in a day or two contain fresh blood. Animals may continue to eat for several days after becoming sick. Dehydration and loss of weight are extensive and rapid. Swine of any size or age may be affected, but the younger the pigs, the more susceptible they seem. Temperature readings vary from normal to 107° F. Pulmonary complications may develop, probably as a result of the inhalation of infected dust.

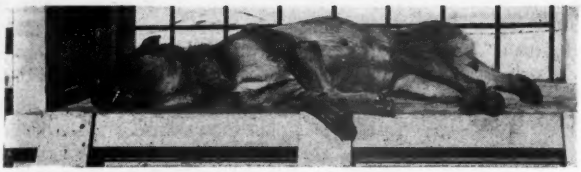
Necropsy.—The lesions found on necropsy are chiefly confined to the stomach, cecum and colon in which the mucosa may be highly inflamed. The stomach contains food. The cecum and colon contain great quantities of mucus and chocolate-colored fecal material or even free blood. If the animals survive for a few days, diphtheritic membrane formation occurs. Septicemic lesions may be encountered, in which case, if the herd is susceptible to hog cholera, that disease must be considered in making a diagnosis. This is the only difficulty in the diagnosis of swine dysentery; otherwise, *res ipsa loquitur*.

To employ the serum-virus treatment in a drove affected with swine dysentery is hazardous in the extreme. This is an instance where some experienced practitioners use the serum alone treatment and the serum-virus treatment later; or, if the condition clears up within two weeks, some give the virus alone at that time. In the "delayed virus" vaccination the virus should not be given more than 14 days after the serum.

Control.—The control of the intake of the infection is very important in this disease. Often the losses cannot be checked until the herd is moved to clean ground. Penning the animals on a concrete floor may be successful in some cases, if the floor is kept scrupulously clean. This is not easy to accomplish. If the animals are following feeding cattle they should be removed from the cattle feed lots.

Treatment.—Sodium chloride has been used quite extensively in the treatment of swine dysentery. It is used in various ways. Some dissolve one gallon of salt in 50 gallons of buttermilk and feed only that. Others dissolve from one to three pounds of salt in five gallons of water and soak one bushel of oats in this solution. All the oats, treated in this manner, that the animals will consume is fed. Fresh water must be easily available to the animals at all times. This is exceedingly important to prevent toxic effects from the sodium chloride. The salt treatment should be given for three days, omitted for three or four days and then given again for three days.

Other medication may be used satisfactorily in conjunction with the sodium chloride treatment. Middlings may be added to the buttermilk to furnish more nutrition and more vitamin B. Some veterinarians feed the oats, soaked in the sodium chloride solution, morning and evening, and at noontime buttermilk with middlings. Other medication is then placed in the drinking water, if desired. The elimination of corn from the ration is especially important.



By JAMES W. HENRY, M.R.C.V.S.

Dublin, Ireland

Trilene Anesthesia in Small Animal Surgery*

THIS paper deals with experiments conducted over a considerable period with an anesthetic agent new to veterinary medicine. I sincerely trust that a report of these experiments will be of material value to the advance of small animal surgery.

The production of insensibility to external impressions has been one of the greatest gifts to mankind since Simpson discovered chloroform in 1847. Like so many other scientific advances chloroform anesthesia was established after many other drugs were eliminated; and now, just 100 years later, the veterinary surgeon and his opposite number in the medical profession, need no longer agree with that phrase attributed to William Shakespeare: "I must be cruel only to be kind."

The human anesthetist is provided with a vast number of anesthetics from which to choose and as a result the mortality rate resulting from inhalation methods is extremely low. The same statement should obtain in our profession and no doubt will when improvements in the technic of veterinary anesthesia are perfected.

All are well acquainted with the several advantages of inhalation methods as compared with the other routes of administration resulting in general anesthesia. One obvious advantage being that if collapse of the patient be impending the anesthetic may at once be withheld and antidotal measures applied. Individual idiosyncrasy does not worry the veterinarian to the same extent as the human surgeon nor does it apply to the same degree in the case of other methods of anesthesia in animals. However, animals of the same species and similar age, weight and sex, require varying amounts of anesthetics.

There are, as all know, various volatile agents which may be used, either singly or in combination, to produce anesthesia in the smaller of our patients. These drugs vary in their effects and safety. The anesthetic of which I am about to speak is, I am convinced, the most dependable agent for general anesthesia in small animals.

*Presented at a meeting of the Veterinary Medical Association of Ireland and adapted from the *Journal of the Veterinary Medical Association of Ireland*, 1:2, p. 73. 1947.

Physical and Chemical Properties

Trilene* is a specially purified, stabilized and distinctly colored trichlorethylene prepared for anesthetic purposes. It is stabilized by the addition of thymol (0.01%) and colored by the addition of a harmless blue dye "waxolin blue" (1.200,000). It is a blue volatile liquid with an odor somewhat resembling chloroform. It is practically insoluble in water, but is miscible with ether and chloroform, with fixed and volatile oils, and with most organic liquids.

Trilene may be heated without decomposition, but if its vapor, diluted with air, is exposed to a naked flame or is drawn through burning tobacco, decomposition occurs giving rise to hydrochloric acid and traces of phosgene; hence no smoking should be permitted while it is being used. Trilene is contained, and should always be kept, in amber bottles to ensure maximum stability during storage.

Methods of Administration

Owing to the relatively low volatility of trilene, the open mask method of administration is unsatisfactory. It is necessary, therefore, to use an apparatus which will ensure a maximum concentration of vapor at least for initial stages of anesthesia. The flow of trilene can be cut down considerably as the time proceeds and it may, in fact should, be withheld altogether some time before the completion of the operation. If, for example, the operation is an intra-abdominal one, the vapor should be cut off, and the mask removed, while the skin sutures are being inserted. By varying the flow of air or oxygen through the trilene it is possible to induce anesthesia of various depths.

With the apparatus we use it is possible to determine the rate of oxygen flow per minute which passes through the trilene, and in that way we can vary the anesthesia at will. For short operations such as cat castrations, dental extractions, removal of simple new growths, etc., a "single dose" method of administration is quite satisfactory.

*Trilene—proprietary name for trichlorethylene containing 0.01% of thymol.—*Dorland.*

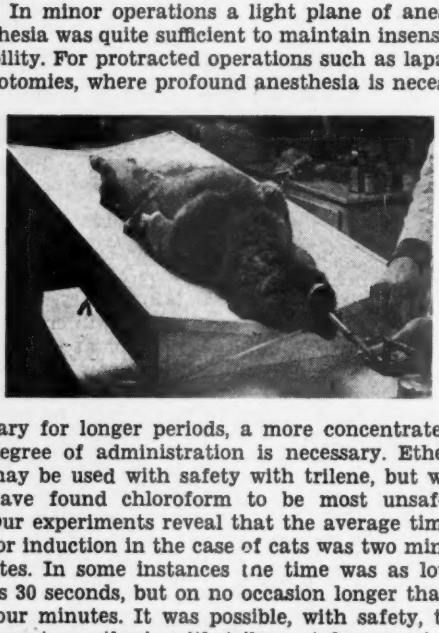
When conducting early experiments with trilene I used a simple apparatus consisting of a Woulfs bottle, fitted with an inlet and outlet glass, attached to rubber tubing. It soon became obvious that there were too many disadvantages with this apparatus, and it was replaced by Boyle's bottles.

Premedication

In the majority of cases it is not necessary to give a sedative before administrating trilene, though in the case of very nervous dogs, and larger breeds such as Alsatians, retrievers, greyhounds, etc., it is an advantage, since excitable animals are more amenable when the mask is applied, and large dogs will probably require less trilene to produce a state of anesthesia. We have used various agents for this purpose, and found seconal* produced the best results. The dose was 1.5 to 3.0 grains depending on the size of the patient. Seconal is a powder supplied in capsule form, and administered 30 minutes prior to induction with trilene. Cats, in our opinion, do not require premedication.

Induction

In minor operations a light plane of anesthesia was quite sufficient to maintain insensibility. For protracted operations such as laparotomies, where profound anesthesia is necessary for longer periods, a more concentrated degree of administration is necessary. Ether may be used with safety with trilene, but we have found chloroform to be most unsafe. Our experiments reveal that the average time for induction in the case of cats was two minutes. In some instances the time was as low as 30 seconds, but on no occasion longer than four minutes. It was possible, with safety, to repeat anesthesia with trilene at frequent intervals, when required, upon the same animal; the time of induction with repeated use remained about the same.



In the case of dogs, the induction time was more variable as is shown in the following table which includes experience with 817 dogs:

Breed	Minutes
Puppies, Yorkshire terriers, Pekes, etc.	1½ to 2
Cairns, fox terriers, others of this size	2 to 4
Large cockers, elkhounds and others	3 to 4
Greyhounds, labradors, etc.	3 to 5

Aged dogs of all breeds are more susceptible to trilene vapor than were younger ones. In the case of a 16-year-old French poodle, for example, the animal was quite limp, and ready for operation in 30 seconds.

Duration of Anesthesia

In the case of a simple and brief operation, when the duration of insensibility need only be short, a rapid induction may be produced and the mask removed at once. The duration will be sufficient to carry out the operation in most cases. More prolonged operations require lengthier anesthesia which can be undertaken confidently with trilene. An occasional case of collapse may occur at the beginning of anesthesia, but this can be avoided by slow induction in the first place.

Observations During Our Experiments

1. Hemorrhage from larger blood vessels, and capillary oozing, was very much less, and in some cases negligible, as compared with other anesthetics.

2. There was complete absence of reflex movement when the primary incision was made. The corneal reflex was abolished in most cases.

3. There was marked reduction in salivation. In some cases the inside of the mask was quite dry when removed at the close of the operation.

4. Complete abdominal relaxation occurred after a short period, and was maintained throughout operations.

5. A prolonged and deep anesthesia was induced in two cases to ascertain if recovery would take place. In the one, a ten-year-old tomcat in good health and condition, the duration lasted from 10:00 a.m. when induction was complete, to 2:00 p.m. when mask was removed. The cat made a good recovery in 25 minutes, and drank milk. The second case, also a cat, recovered in 10 minutes after being under the anesthetic continuously for 16 hours. In both cases the tests were conducted with the animals in a special receptacle which we call the cat box, which was connected by tubing with the trilene supply apparatus. We have found this cat box a great help, as by its use forceful restraint of cats is avoided. A large box made on the same lines was used for dogs but it was found to be impracticable.

6. No abnormalities in temperatures were recorded at various times whilst animals were under the anesthetic.

7. Specimens of urine obtained during and

*Seconal a proprietary preparation: sodium propylmethyl carbinylallylbarbiturate.—*Dorland.*

after anesthesia were analyzed and no changes were recorded.

Recovery

In the vast majority of cases the time required for recovery from the anesthetic was short, though obviously this depended upon the depth of narcosis or anesthesia. Following short operations such as cat castration, or the removal of foreign bodies from dogs' throats, the animals appeared normal again at once. Major operations requiring a longer period of anesthesia naturally resulted in a longer time before complete consciousness was regained.

Two hundred twenty-five cats between the ages of two to eight months were castrated under the influence of trilene, when the average time for complete recovery was 1½ minutes. In 176 cats subjected to ovarohysterectomy the average time was nine minutes.

There appears to be a difference in recovery time in the various breeds of dogs. Results tabulated are as follows:

Breed	Minutes
Puppies, Yorkshire terriers, pekes, etc..	5 to 10
Terriers such as cairns, fox terries, etc.	7 to 10
Large cockers, elkhounds, greyhounds, collies, etc.	15 to 20
Retrievers and other large dogs	15 to 30

A long recovery period is usual in obese subjects, though there need be no anxiety, as they ultimately recovered all right. For example, a 10-year-old collie, weighing 86 pounds, and extremely fat, had not recovered completely until 50 minutes had elapsed from the time the mask was removed. The operation was for the removal of a large anal neoplasm. Another dog of the same size, though quite fit, was capable of walking normally in 20 minutes.

Nervous or hysterical symptoms were experienced after removing the mask in four puppies, between the ages of two and four months. There was complete recovery, with cessation of the nervous condition, in each case within 20 minutes. These unpleasant symptoms were not manifested in succeeding cases owing, I believe, to an improved mask being used. Three masks of different sizes, with leather extensions, were made and tested. Each mask was fitted with a special inlet to take a corrugated tube which has a wide bore and allowed of a heavy concentration of the anesthetic when required. This arrangement was an immediate success and there was no repetition of unpleasant symptoms with young dogs.

Greyhounds reacted favorably, though it is necessary to utilize premedication and thus endeavor to abolish any tendency to nervousness when the mask is applied and inhalation commenced.

Trilene Anesthesia in Swine

Although I have subjected only seven pigs to trilene as yet, I hope to study the effects of this agent on many others to ascertain if it be satisfactory for these animals

Two boar pigs two months of age, were admitted to the clinic suffering from phimosis due to almost complete closure of the sheath opening. Although local anesthesia would have sufficed it was an opportunity to study the action of trilene. Examination proved the animals to be in perfect health and condition. The inhalation mask was applied after the pigs were placed under restraint on the operating table. Needless to state these animals were no exception to the general rule, and voiced their disapproval in no uncertain manner. The squeals gradually faded as three litres per minute of oxygen were delivered. In one case induction was complete in 3.5 minutes, in the other four minutes. Duration of operation was seven minutes in one animal which was removed to the open air and had completely recovered in 15 minutes. Duration of operation in the case of the second animal was five minutes and complete recovery resulted in eight minutes. There were no unfavorable sequels in either case.

Five three-month-old pigs were received for castration in perfect health and condition. Induction in both cases occurred in five minutes, duration was five minutes, and recovery in one case occurred in eight minutes, and in the other in 10 minutes.

Trilene Anesthesia in Birds

A swan suffering from an old-standing abscess was put under the influence of trilene, the small mask being used. Induction was complete in one minute without the least struggle. Duration of anesthesia was 10 minutes. Recovery of this six-month-old bird was extremely rapid, being complete in 12 seconds.

Operations in Which Trilene Was Used

Operation	Dogs	Cats	Pigs	Birds
Castration	7	225	5	4
Caudectomy	95	3	—	—
Dental operations	176	26	—	—
Ovaro-Hysterectomy	123	170	—	—
Parturition	43	23	—	—
Exploratory laparotomy	15	4	—	—
Hernias: umbilical	19	5	—	—
inguinal	13	9	—	—
scrotal	5	2	—	—
perineal	2	3	—	—
Neoplasia: mammary	12	11	—	—
anal	76	1	—	—
all others	18	6	—	—
Urethral operations	9	1	2	—
Removal of foreign body	30	5	—	—
Treatment of abscesses, wounds, cysts, etc.	62	60	—	2
Aid to diagnosis	8	14	—	—
Aid to euthanasia	114	176	—	5
Total 318	169	142	4	3

A young hawk, about four months of age, affected with a similar condition was received for operation. Induction was complete within one minute. Duration was seven minutes,and recovery in 30 seconds.

Trilene anesthesia was administered to a domestic fowl with striking success. Induction was complete within one minute. Duration 16 minutes, and complete recovery in five minutes. The wattles and comb served as an indication of overdosage as they became cyanosed when a heavy concentration was given. In this case cyanosis was intentionally produced and recovery took place without ill effects.

Mortality

So far the mortality has been extremely low —five deaths in some 1600 anesthesias. There were pathological conditions present in four of the cases in which death occurred. In the fifth the necropsy did not reveal the cause of death.

Discussion

A paper such as we have heard tonight stresses once again the outstanding importance of clinical application work as distinct from the original discovery of a drug. Considerable time often occurs between these points, as was exemplified recently, for example, by the drug penicillin discovered by Fleming in 1928, but not clinically developed and hence of no practical significance until the work of Florey and co-workers in 1940. Many similar cases have occurred and trilene is in some respects in the same category. As a grease solvent it has been manufactured for many years and its anesthetic or potential anesthetic properties were doubtless recognized a long time ago. No critical tests were made, however, until 1935. Even then Striger and co-workers in the United States who conducted the first tests reported mainly unfavorable results and nothing further transpired for some five years. In 1940 Chalmers in London tested trilene upon himself and reported his experience to the Joint Anesthetics Committee of the Medical Research Council and the Royal Society of Medicine. This committee was so impressed that it was decided to inaugurate trials immediately and these were made under the direction of the well-known anesthetist, Langton Hewer. Langton Hewer reported his findings in 1941 and since then the drug has found wide usage in the human field.

The trials showed that in man the characteristics of trilene are such as to make it particularly useful for maintaining a light plane of narcosis, that it is a pleasant anesthetic for the patient both before and after operation and that it is extremely safe. Up to the end of 1944, over a half million anesthesias with trilene had been given and the only troubles reported were one case of heart failure and a few cases of poisoning when trilene was used in a closed circuit with soda lime. Under certain conditions the latter decomposes trilene to dichloracetylene. The use of trilene in a closed circuit with soda lime has now been discontinued and despite the fact that many millions of anesthesias have been undertaken, fatalities associated with its administration are conspicuous by their absence. The natural role of trilene is as a replacement for chloroform which is, of course, much more toxic. Trilene, with certain limitations, is fully capable of undertaking this role and in large measure has already done so in some types of human anesthesia.

The general effects of trilene on the cardiovascular, central nervous and respiratory systems have already been established. The drug has little or no effect on blood pressure and all observers are agreed that with it capillary oozing is much less than with ether—an important practical point. The effects on the heart and pulse rate are variable. Exact and detailed studies of these were made by Malloch *et alia* in 1943 and by Waters *et alia* in the same year. Electrocardiograph experiments were conducted with dogs and showed general bradycardia and occasional arrhythmias but experience has indicated that these effects are apparently of no clinical significance. Heart failure, even when dosage is excessive, is extremely rare.

Cranial nerve palsies have occurred in a few cases in man and a few instances of convulsions have also been reported. All of these recovered. It is probable that the convulsions occurred rather because of lack of oxygen than through excess of trilene. So far as the respiratory system is concerned trilene is an excellent anesthetic since it causes no irritation, no pulmonary disturbance, and no excess salivation. In overdosage the respiratory rate is gradually raised, giving an adequate indication that excess of the drug is being employed and hence an effective means of control. The condition is easily rectified by cutting down the trilene flow or conversely by allowing more oxygen.

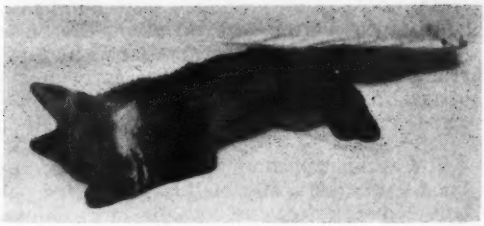
The work which Mr. Heney has described tonight has shown that trilene can be employed safely and effectively in veterinary practice. The drug itself is a stable liquid with an odor somewhat resembling chloroform, but it varies from it in one point which is of considerable importance in veterinary usage, viz., it is considerably less volatile. For this reason it cannot be employed by the sponge and bottle method and, as Mr. Heney has stated, it is not entirely satisfactory when used alone in a simple hand-operated arrangement. How far premedication can overcome these difficulties has yet to be determined. In man the agents for premedication with trilene are morphine and scopolamine or atropine or both. With these it is quite possible that an ordinary Wright's apparatus might suffice for trilene administration, and trials should be made in this direction. Closed masks as employed in man and simple modifications of them for animal use, as demonstrated by Mr. Heney, were readily procurable and fully satisfactory.

Trilene then has both favorable and unfavorable features and in deciding its place in veterinary practice it is well to weigh these against each other. The advantages are the wide margin of safety, the absence of side effects such as excessive salivation, nausea and vomiting, and the freedom from pulmonary irritation, even in cases where there are pre-existing pulmonary lesions. The disadvantages are the low volatility of the drug and the necessity for the use of apparatus to overcome this.

It seems fairly certain that the use of trilene in view of these points will be limited to small animals. The necessity of obtaining a satisfactory anesthetic for large animals, especially the horse, is well recognized and we have been working actively in this field, not entirely without success.—D. D. Ogilvie, M.R.C.V.S.

Encephalitis in the Fox and in the Dog*

By T. T. CHADDOCK
Grafton, Wisconsin



IN order to fully understand the occurrence of fox encephalitis in the dog, may I first describe it as it occurs in its natural host, the fox. With this background a better knowledge of the various ramifications of the disease may be had. Encephalitis is not a new disease. It has occurred enzootically for at least 25 years on fur farms of the Fromm organization and taken a toll of over 8,000 foxes. It has been identified by laboratory studies for a period of 10 years. Its spread in breeding pens is slow, with only occasional losses—the aggregate amounting to not more than 5% during an entire year.

Fox encephalitis is widely distributed among foxes in captivity and persists as an enzootic disease over long periods on the larger fox ranches.[1] It is caused by a virus which is easily filterable through ordinary bacteria-proof filters. The disease may be identified by the occurrence of specific intranuclear inclusions. Although in the past this disease has been confused with canine distemper it is a distinct entity. The virus of fox encephalitis differs markedly in its characteristics from the virus of Carré.

Clinically fox encephalitis is a disease of the central nervous system, as the most usual symptoms are referable to irritation or damage in the brain and spinal cord. Pathologically the disease is a generalized virus infection and involves particularly the endothelial cells of the smaller blood vessels. The injury to the vascular system results in hemorrhage and cellular degeneration. As the central nervous system is functionally most susceptible to this type of damage, the symptoms observed are of central nervous origin.

Epizootic Occurrence

Under certain conditions a more rapid spread of the disease is observed with small outbreaks in epizootic form. Such a spread is apt to occur after such procedures as re-mating foxes in the fall. Occasionally a well defined epizootic spread of this disease is observed in early summer soon after the fox pups emerge from the kennels. Epizootics of this disease are prone to occur when foxes are congregated and allowed to mingle in large fur runs or ranges. In such circumstances the disease may occur in explosive form, sometimes involving as high as 40% of the animals present. It may make its appearance within six days after entrance of foxes into a common enclosure and the height of the epizootic may be reached within 21 days, with almost complete subsidence within four weeks after entrance.

Transmission

The disease is transmitted by direct contact with upper respiratory secretions carrying the virus. Identification of the virus is nasal washings of both sick and contact animals has been accomplished experimentally. The occurrence of virus in the nasal secretion has been shown to be due to direct involvement of the nasal epithelium.

Morbidity and Mortality

In some outbreaks of fox encephalitis morbidity and mortality are almost identical, with practically all foxes that show symptoms succumbing to the infection. In other outbreaks the morbidity may be as high as 25% with a mortality of only 2%. This difference in degree of morbidity and mortality is due to the occurrence of distinct types of the virus as well as to changes in the virulence of the same virus type. The mortality from fox encephalitis will therefore vary from as low as 2% up to 40% of the animals exposed.

Course of the Disease

Experimentally it has been shown that fox encephalitis runs an extremely rapid course so far as recognizable symptoms are concerned. The incubation period varies from two to six days, depending upon the type and virulence of the virus. The onset is abrupt with the sudden development of symptoms referable to damage in the brain and spinal cord. The duration of symptoms is short, varying from one hour to three days, the usual duration being less than 24 hours.

In this disease death occurs in highly susceptible animals at the onset, upon the gen-

[1] Green, R. G. *Vet. Med.*, 31:12. 1936.
*Presented at the annual meeting of the Colorado Veterinary Medical Association Denver, Oct. 9-10, 1947.

eral invasion of the virus. In resistant animals, which recover from the infection, the virus appears to persist for several weeks with symptoms occurring only during the early period of general invasion.

Symptoms

The abrupt appearance of the initial symptoms is characteristic of this disease. A violent convulsion is the most common initial symptom. This is usually followed by a lethargic state in which the animal walks around though it appears to be asleep. It may then become conscious and develop a state of hyperexcitability, which terminates in another convulsion which is in turn followed by the lethargic state. Foxes can be killed by the slamming of doors or the making of any excessive noise. Careful observation often shows that a general weakness is the first symptom, although the wild nature of a fox usually prevents the discernment of this symptom. Occasionally there are varied symptoms such as muscular twitching and definite hallucinations. Sudden death is usual outcome, however, death often supervenes only after a prolonged terminal coma.

Physical Findings

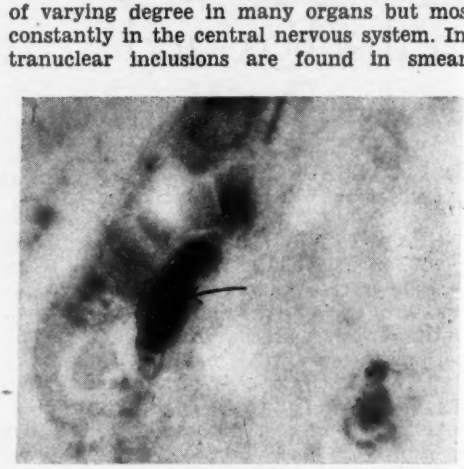
Careful observation in experimental animals shows that the development of major symptoms is usually preceded by a definite rhinitis for 24 hours, during which clear liquid drips from the nose. Occasionally a purulent discharge develops. The eyes are generally clear with little suggestion of any discharge. Sometimes the eyes are involved with an interstitial keratitis and sometimes a nystagmus is present. Hemorrhage into the anterior chamber of the eye is not uncommon. Stools are usually soft with much mucus present. The feces may be bloodstreaked from hemorrhage into the lumen of the bowel, or may consist of blood only. Fox encephalitis is such an acute disease that there is usually no loss of weight and animals die in full flesh.

Necropsy Findings

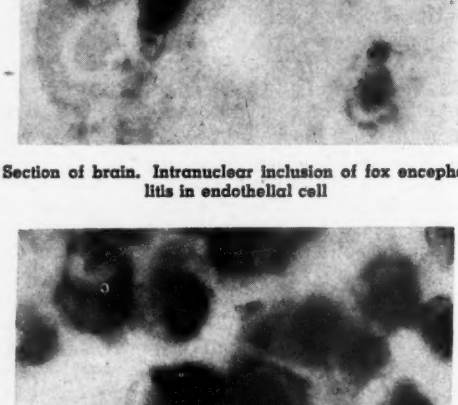
The animal is in good flesh. The essential gross character of fox encephalitis is hemorrhage, as the disease is primarily an involvement of the blood vessels. Hemorrhages usually occur in the heart and may be subendocardial. Gross hemorrhages also involve the adrenals, pancreas, thymus, submaxillary glands and lungs. Tissues in which gross hemorrhages are of greatest importance are those of the central nervous system. Here the gross hemorrhages are exaggerations of microscopic hemorrhages which occur throughout the brain and spinal cord. The outstanding lesion is hemorrhage of the diaphragm.

Microscopic Pathology

Microscopic examination shows hemorrhage of varying degree in many organs but most constantly in the central nervous system. Intranuclear inclusions are found in smears made from the hypocampus of the brain or from a small piece of the dura mater. Not infrequently the intranuclear inclusions are found in the hepatic cells of the liver and in the medullary cells of the adrenal. Fox encephalitis may be distinguished from the central nervous system type of canine distemper by the presence of these specific inclusions.



Section of brain. Intranuclear inclusion of fox encephalitis in endothelial cell



Section of spleen of fox encephalitis. Histocyte containing intranuclear inclusion

Immunity

Foxes that recover from encephalitis are permanently immune. Natural immunity appears to be the most important factor in the mortality of this disease. Highly susceptible foxes die at the onset of the generalized infection; animals with a sufficient degree of natural immunity show some symptoms at the

onset but recover. Many animals are apparently so resistant that no invasion of the virus can be discerned. As the course of the disease is so abrupt, it does not seem that acquired immunity plays any role, in the susceptible animal, in recovery from this infection. If the natural resistance is low, the animal dies promptly upon invasion of the virus. With some degree of resistance, the animal does not die, and later an acquired immunity eventually eliminates the virus. The acquired immunity has been shown to be due to the development of antibodies in the blood.

Antiserum

A rather efficient serum for passive immunity to fox encephalitis can be obtained by the hyperimmunization of foxes that have recovered from it. Weekly injections of brain, liver or spleen virus continued over a period of six months are necessary to produce a satisfactory antiserum.

Vaccination

Attempts to develop an efficient vaccine made from killed virus have given unsatisfactory results. Here, as with many other viruses, it appears that high concentrations of killed virus must be used, concentrations greater than are found in the tissues of infected animals.

Serum-Virus Vaccination

Extensive attempts to develop a serum-virus combination for vaccinating against fox encephalitis have shown this procedure to be highly dangerous because of the development of delayed infections. After injection of serum-virus mixtures a fox is protected against immediate invasion of the virus and appears well for about four weeks. At about that time many animals so injected die from an acute attack of the disease. Development of acquired immunity to this disease is so slow that by the time the serum effect has worn off, many animals are still highly susceptible and persistence of the virus causes delayed infections. Although experimentally animals can be immunized by the use of serum-virus mixtures and subsequent injections of serum at two-week intervals, the procedure has proved somewhat dangerous and unwieldy, and after six months, 8% of the treated animals are still highly susceptible.

Control of Fox Encephalitis

From rather extensive experimental tests with fox hyperimmune serum, it appears that acute epizootics of encephalitis can be controlled by passive immunity under conditions permitting successive injections of antiserum. With more extensive recognition of this disease it should be possible to have available commercial serums for the control of acute outbreaks. Successful vaccination against fox encephalitis is still a complex problem requiring further investigation of the immunological aspect of the disease.

In discussing distemper and distemper-like diseases,[2] I prefer to use the term "distemper complex." There is a great tendency to diagnose distemper in any dog which shows a purulent discharge from the eyes and nose and at the same time, is running a temperature. From our experimental work at Fromm Laboratories, it is becoming more and more evident that symptoms, such as a purulent discharge from the eyes and nose, can be brought about by any increase in temperature. Apparently, this temperature must be elevated for some time, starts the dog's mucous membranes immediately flowing and this flow of mucus sustains bacterial growth, resulting in a purulent mass. This condition clinically indistinguishable from virus distemper misled Ferry many years ago. Slingman described it more recently, Frohring did much research on it and innumerable practitioners have observed it.

I have seen this particular picture in a variety of diseases—among them being more common types of pneumonia, Steptococcus infections, malnutrition, paratyphoid and fox encephalitis in dogs. Obviously, a good clinician develops a clinical sense and can, in many cases, make a fairly accurate diagnosis among these various diseases. However, I am equally certain, that these diseases are diagnosed in many cases as simply "canine distemper."

The Disease in Dogs

Dr. Robert G. Green first described fox encephalitis some 15 years ago, when a violent outbreak occurred among foxes. At the beginning of his studies, he believed it to be fox distemper; and it was not until a considerable amount of work had been done on it that it became apparent that it was a virus disease distinctly different from the distemper virus, *i.e.*, Carré's distemper virus.

The distemper virus attacks only the epithelial cells or cells of epithelial origin. Also, the distemper virus produces cytoplasmic inclusion bodies in the cells. The fox encephalitis virus, on the other hand, invades only endothelial cells and forms intranuclear inclusion bodies. Fox encephalitis is not a true encephalitis because it does no direct damage to the nerve tissue. The damage is done to the blood vessels in the brain, which results

[2] Siedentopf, H. A. October, 1947.

in cerebral hemorrhages. These hemorrhages injure the nerve tissue and the symptoms of encephalitis are a consequence.

Another difference between this virus and the distemper virus is shown in the reaction of ferrets. These animals are immune to the fox encephalitis virus, but highly susceptible to the virus of Carré.

Still another striking difference appears in animal inoculation. When fox encephalitis virus is injected into the anterior chamber of the eye of either fox or dog, it starts growing immediately in the endothelium lining the inside surface of the cornea, causing damage to the cells and, consequently, causing the cornea to cloud. This is an extremely delicate test for the detection of this virus. When canine distemper virus is injected into the anterior chamber of the eye, there is no change in the cornea and the eye remains clear.

When this virus is experimentally injected into dogs, these dogs promptly develop a fever varying from 103° to 106° F. and this temperature is maintained for from five to ten days. Again, a purulent discharge appears in the eyes and nose; the dog is definitely sick; his coat becomes rough. About 75% of affected animals recover promptly. The other 20 to 25% succumb to the infection. The terminal stage of the disease varies greatly in dogs. About one-half of the 20 to 25% of fatal cases show neurological symptoms; only an intensification of the clinical picture just described. They are usually dead within seven to ten days from the time of injection. The remaining one-half of this 20 or 25% manifest various types of nervous symptoms, varying from a simple blinking of the eyes to violent convulsions. Generally, these neurological symptoms persist for a long time if the dog does not die, however, not enough of these cases occur to change the 20 to 25% mortality. Several of our experimental dogs have developed the classical chorea-type symptom of jerking a front or hind leg. Others develop paralysis of the hind legs.

One of the striking differences between this disease and distemper is that a portion of the infected dogs remain on feed to within 24 to 48 hours of death. In my experience this is rarely seen in canine distemper. The progress of encephalitis is far more rapid than that of distemper. We consider the normal course of distemper in a dog to be three or four weeks. Dogs infected with the fox encephalitis virus are usually dead within two weeks or have recovered completely by the end of the third week.

Another interesting point of differentiation between the fox encephalitis virus and the distemper virus, lies in the antigenic characteristics shown in the production of immune serum. Dogs immunized against fox encephalitis produce an extremely high titre against this virus. The virus if left in contact with the hyperimmune serum *in vitro*, will be neutralized rapidly. On the other hand, it takes considerable effort to produce a hyperimmune serum for the distemper virus; and not until after many injections have been made, does one obtain a good canine distemper antiserum. Hyperimmune serum is a strikingly effective treatment for fox encephalitis. I have seen dogs, and foxes too, that were in convulsions, recover following the injections of hyperimmune serum.

Acknowledgment should be made of the cooperation of several veterinarians, in various parts of the United States, in my studies of fox encephalitis in dogs. They have supplied me with either the whole carcass or specimens from the various organs of dogs that had died from distemper-like disease that apparently was not distemper. Just recently a veterinarian in the Detroit area sent us two carcasses from a kennel in which an outbreak had occurred and in which none of the usual treatments for distemper had brought any response. Both of these dogs were carefully studied at the laboratory and both proved to have had fox encephalitis infection. We were not only able to demonstrate the intranuclear inclusion bodies in the endothelial cells of these dogs, but we were able to isolate the virus from the brain and have established the identity of this virus to be identical to that of the fox encephalitis virus previously isolated from foxes and from other dogs throughout the country. We have received dogs from veterinarians in the Chicago area, in the West-Coast area, and from Florida, in which fox encephalitis was definitely determined to be the cause of death.

I do not know as to how prevalent this disease is among dogs in the United States; but from various discussions with veterinarians, it becomes apparent that this disease is more prevalent than we have heretofore realized. I shall certainly welcome any material which you veterinarians care to send me that this work may be continued with a view to determining more accurately the frequency of occurrence of this disease in animal hospitals.

Prevalence

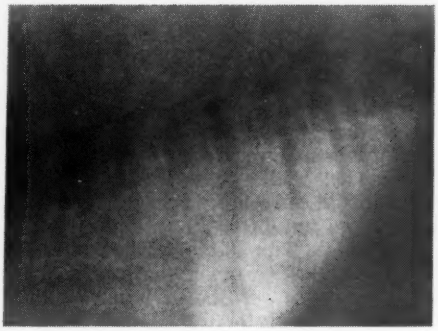
To repeat the prevalence of fox encephalitis in dogs is, at present, unknown, but from our knowledge of encephalitis in the fox, I feel that we have a solid foundation upon which to conduct further research on this problem. Again I solicit the cooperation of all veterinarians in submitting specimens for laboratory examination.

Clinical Reports

A Dog Learns to Walk Again

February 13, 1947, a male, toy fox terrier, five months of age, was presented to the veterinary clinic of Kansas State College for treatment of wounds. The dog had been shot, accidentally, while rabbit hunting with his owner.

Examination revealed pain as evidenced by viciousness when handled, complete motor and sensory paralysis posterior to the thorax, and three superficial wounds on the right side. A dorsal-ventral and a lateral roentgenogram were made. These revealed one shotgun pellet located between the seventh and eighth thoracic vertebrae lying on the spinal cord and a possible fracture of the eighth vertebrae. The paralysis was evidently caused by pressure on



One pellet is pictured in the spinal cord

the spinal cord. The other two pellets were lying under the skin.

The wounds were cleansed and tincture of metaphen was applied to them. Injections of 2500 units of penicillin were made into the wound tracts every four hours until surgery was performed.

February 15.—The dog was anesthetized with sodium pentobarbital and restrained on the operating table in ventral recumbency over a roll of cotton. The cotton was used to arch the back and thus widen the space beween the spinous processes of the thoracic vertebrae. The operative area was prepared by shaving and the application of antiseptics.

A two-and-one-half-inch incision was made, one inch lateral to the spinous processes of the sixth to the ninth thoracic vertebrae, on the right side. The fibers of the longissimus dorsi were separated by blunt dissection to the transverse processes of the vertebrae. The wound margins were spread with wound retractors. A blunt probe was inserted into the skin wound to facilitate the location of the tract as it passed through the operative area. A pair of alligator forceps were then inserted into the tract and with the aid of a fluoroscopic hand screen the pellet was located and removed from the spinal canal. A large quantity of thick, dark blood escaped from the canal when the pellet was removed. This was the result of hemorrhage at the time of injury and caused considerable pressure on the cord. The wound tract and entire operative area was irrigated with 30,000 units of penicillin. The aponeurosis of the muscle was closed by a continuous suture of No. 0, 20-day, chromic catgut and the skin incision was closed with a continuous suture of No. 8 cotton thread. A sterile dressing was placed over the incision and a plaster of paris cast applied. This extended from the neck to the penis.

One hour after completion of the operation the dog had partially recovered from the anesthetic and extension of the hind limbs was noticed.

Post operative care consisted of massage of the fore and hind limbs, tonics and vitamins, emptying of the bladder by abdominal pressure from three to five times daily, and low enemas every other day until normal evacuations occurred.

February 20.—The cast and the skin sutures were removed. The skin incision had healed by first intention. A new cast was applied.

February 21.—Normal defecation started on this day.

February 24.—The cast was removed and the body and limbs were thoroughly massaged.

February 25.—Voluntary urination started on this day but seemed to be a reflex action. The bladder was not completely emptied at this time.

March 1.—The dog raised himself by use of the hind limbs but fell immediately.

March 5.—The extensor muscles had become much stronger by this time and frequent attempts to stand were made. He often fell, however, while attempting to step forward. This appeared to be caused by an inability to coordinate the movements of the hind limbs. Hydrotherapy was started by placing him in a bathtub filled with warm water. Activity in the tub was encouraged for 30 minutes by tempting him with meat. A brisk massage of the entire body with a turkish towel followed his removal from the tub. This therapy was continued daily.

March 12.—The dog was beginning to use the hind limbs while moving in the tub.

March 17.—The dog was discharged from the

clinic. The owner was advised to continue the daily hydrotherapy and massage.

March 22.—The dog was returned for an examination and a report on his progress. The owner said that he had taken four steps on March 20. When raised from the ground, the dog was noticed to continually move the hind limbs as if walking.

May 9.—The dog was again returned for an examination and progress report. The owner said the dog would rise and walk four or five feet many times a day. The hind limbs showed normal strength but coordination of their movements was poor.

Comments.—This dog was very friendly and affectionate throughout the period of treatment, subsequent to the operation. He maintained a ravenous appetite and his rate of growth was normal. He was always active and full of energy. Probably this was detrimental to his re-education in the use of his hind limbs since he never had the patience to move slowly.

This case appears to be similar to a disease in man known as traumatic transverse myelitis, the prognosis of which is usually unfavorable. The recovery of motor and sensory impulses in this case make it of special interest. We believe that the time which has elapsed since the injury occurred has been too short to give up hope for a return of coordinated movements and a complete recovery.

C. K. JEWELL
J. E. MOSIER
R. E. WITTER

Manhattan, Kan.

Diabetes Insipidus in a Dog

March 21, 1947, a male terrier was presented at the hospital with the history of large intake of water and copius secretion of urine. The appetite remained fair but the animal had been losing weight, was dehydrated and the hair coat had become dry and harsh. Questioning revealed that the dog had been treated by another veterinarian who made a diagnosis of a kidney inflammation.

A specimen of urine analyzed at a local hospital showed the following:

Sp. gr. 1.003	Blood cells, several
Sugar .....Neg.	Bacteria, many
Albumin ....Pos.	
Color .....Pale	

In chronic interstitial nephritis the urine would analyze similarly, and although there is also an increase in the intake of water, and large excretions of urine, the symptoms were more severe than one should expect in chronic nephritis. On the theory that the bacteria were the cause of the albumin, the dog was put on a course of sulfathiazole for three days after which another specimen was taken and analyzed. This time it showed the following:

Sp. gr. 1.007	Blood cells, few
Sugar .....Neg.	Bacteria, none
Albumin ....Neg.	
Color .....Pale	

On the basis of the above, a diagnosis of diabetes insipidus was made and the animal put on a high protein diet, principally meat.

During August the dog was brought in for a rabies inoculation and the owner was questioned concerning it. The spirit of the dog was back to normal. Within a period of two weeks after the meat diet was started he was able to run and play without tiring much. The amount of urine passing now has decreased to almost normal and understandably the water intake had proportionately lessened. The weight of the animal had increased steadily and the hair coat had taken on a healthy gloss. It is believed that within a few months the dog will be perfectly normal.

MARTIN G. LORBER

Winston-Salem, N. C.

Tetany in a Mule

May 3rd, late on a Sunday evening, I was called some distance to a farm, and upon arrival found a very sick, mare mule.

The owner had worked a team of good, large, high-headed mules to a seeder, when four mules should have been worked. These mules had worked but little all spring, on account of wet fields. They were worked hard from noon until dusk to finish sowing the field as more rain appeared likely. When unhitched the mules were watered at a tank a few feet from the barn and one mule became sick before she got into the barn.

The sick mule was floundering so badly, when I arrived, that a complete examination could not be made, but I succeeded in catheterizing her. The urine was creamy white in color and, since there were no group of muscles swollen, I diagnosed the case as exhaustion colic, brought on by consuming too much water at one time when exhausted by hard work. She was treated accordingly and in about 20 minutes was standing quietly. I recommended rest, feeding dry hay, but no grain, until the next day.

I did not hear of the case further for 34 days.

June 6th I was called again to see this mule. The owner stated that one week after my first visit he had called another veterinarian to see her, and the veterinarian suggested that she may have had an attack of azoturia to begin with and that was probably the cause of her present condition (stiffness). The vet-

erinarian gave her a hypodermic injection in the neck and some medicine by mouth and did not make a second call.

The owner also said the mule had eaten fairly well and drank plenty of water for a mule, and that her urine had been creamy white all the time, since I had treated her for exhaustion colic more than a month earlier.

This is what I saw that day, 34 days after I had first treated her. She had lost more than 200 pounds in weight, and had not worked an hour. The muscles from her ears to her tail were contracted and somewhat stiffened and hard. Her neck muscles were so drawn and hard that she could not eat grass on the ground but did eat the tops off the high grass. Her dorsal muscles were hard and taut. The intercostal muscles were so taut, that when the ribs were tapped with the fingers it sounded like tapping on an empty barrel. Her abdomen was drawn up until she looked gaunt, while in health she had a large barrel. The urine was still creamy white. Her eye balls were slightly receded into the sockets and looked a little blue but the owner said the color was normal for her. She was slightly constipated but the owner said that also was normal. She had at this time some indications of a stumbler. When she was led toward me my first thoughts were of tetanus, as she walked with a somewhat stilty gait. The mule could lie down and get up at will. I was quite sure at that time that a progressive atrophy of the entire musculature was taking place.

I had seen a large number of cases of tetanus and a great many cases of azoturia, in the old horse days in Kansas City and Chicago and a few here in Olathe, but I had never before seen a case like this one. It was just out of my realm. I treated the mule anyway. You do that when practicing in a farm community.

The mule was given 500cc calcium gluconate solution *via* jugular and 20,000 units of tetanus antiserum subcutaneously. Simply a shot in the dark. I did not believe that she had tetanus, but couldn't quite exclude it.

Three days later I saw the mule again and from all appearance a miracle had happened. Her muscles were fairly well relaxed and she could graze grass on the ground without difficulty. The same treatment was repeated that day. In my own mind I credited the calcium with the improvement but nothing short of the same procedure would satisfy the owner.

June 16th, a week later, I saw her again and repeated the same treatment and pronounced her well; the next day she was at work.

I saw her on June 27th as I was passing the farm. She was pulling her half of a manure spreader and it was very hard work for two mules. At that time she was not the good-looking mule that she had once been, but she looked fairly well and worked well. I saw her several times during the summer and noticed that she was losing flesh continually.

I stopped at the farm September 30th to inquire about this mule and learned she had another attack nearly five months from the time she first took sick and became so stiff she had trouble getting up after lying down. The next morning she was dead. I would still like to know the correct diagnosis for this case. I would have given a great deal for an opportunity for a necropsy.

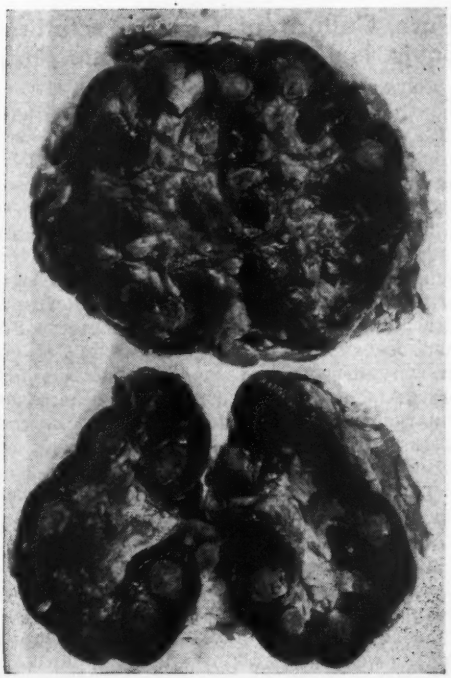
S. L. STEWART

Olathe, Kansas

Rare Calculi in a Calf

A Hereford calf, two months of age, was presented for treatment April 7, 1947, with the following history. The calf had been sick about two weeks. The owner first noticed that it was unable to nurse, and foamed at the nose and mouth. The calf's breathing was labored and it was treated for pneumonia without improvement. It had been unable to stand for the past two days. It was the only sick animal in the herd.

The calf was moribund; respiration labored



All kidney tissue was invaded with lymphocytes

and slow; the temperature 98° F. It died two hours later; no diagnosis having been made.

On autopsy the lungs were normal. The bladder was distended with chalk colored urine containing granules of a white precipitate. The kidneys were enlarged and the medullary portion was filled with a white, chalky precipitate. A severe, acute hemorrhagic enteritis suggestive of uremic poisoning was much in evidence. Cloudy swelling of liver, spleen and heart was the only other gross lesion noted.

The kidneys were sectioned for microscopic examination and on preparation and staining the precipitate dissolved out with Zinker's solution which will not dissolve calcium. Previously we had suspected calcium deposits.

Microscopic examination revealed interstitial nephritis, with invasion of all tissue with lymphocytes and polymorphs. No calcium deposits could be found.

Uremic poisoning, although it was the cause of death and is seen quite often, was secondary in this case. Its cause was of considerable interest. It is thought that these ammonium and sodium urates probably result in the young from the decomposition of the nucleoproteins of the nucleated fetal red corpuscles.

EUGENE C. ALDRICH

Escondido, Calif.

Pure Culture of Corynebacterium Bovis Isolated from Amniotic Fluid

A grade Jersey, three years of age and seven months pregnant was examined February 26th and noted on rectal palpation to have a greatly distended uterus. A tentative diagnosis of hydrops amnii was made and the cow brought to the clinic for treatment.

The history revealed that she was a home raised cow and had calved normally one year ago. She had not shown any previous signs of illness and her lactation had been normal, the milk production being satisfactory. She had been mated to a Shorthorn bull of unknown ancestry and conceived on the first service. The owner had noticed an increasing enlargement of the abdomen for the past four weeks, the swelling accelerating during the week previous to our examination.

The usual symptoms of hydrops amnii were encountered as follows:

1. Emaciation.
2. Great increase in size of abdomen with distention of paralumbar fossa and ventral edema.
3. The animal manifested difficulty managing its weight in walking and lying down.

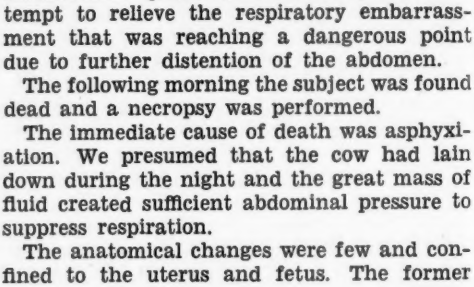
Notwithstanding an unfavorable prognosis, the owner wanted the cow treated. The treatment was of an experimental nature, since we could find no plausible therapy in any text. On the day of the original examination 40mg of stilbestrol was injected intramuscularly, with instruction to include additional doses of the estrogen and also posterior pituitary. Our idea was to cause an expulsion of the fetus and possibly save the cow's life.

February 27th, 18 quarts of amniotic fluid was drained from the uterus under aseptic technic *via* a cannula in the right flank. That afternoon 27 quarts were removed, in an attempt to relieve the respiratory embarrassment that was reaching a dangerous point due to further distention of the abdomen.

The following morning the subject was found dead and a necropsy was performed.

The immediate cause of death was asphyxiation. We presumed that the cow had lain down during the night and the great mass of fluid created sufficient abdominal pressure to suppress respiration.

The anatomical changes were few and confined to the uterus and fetus. The former



The immediate cause of death was asphyxiation

was distended with about 10 gallons (estimated) of fluid and the cotyledons were necrotic and in a macerated state. The fetus was edematous through all soft tissues and showed marked ascites and hydrothorax.

A sample of the amniotic fluid taken aseptically, the first time the trocar and cannula were used was plated and found to contain a poor culture of *Corynebacterium bovis*.

There is no particular significance to this report as the diagnosis and outcome were typical; the subject followed the usual fatal course. However, the author feels that the bacteriological findings are of importance as there are no previous records of such finding, and future similar findings may possibly aid in determining the etiology of this disease.

JOEL N. KUTZ

Far Rockaway, L. I., N. Y.

Book Reviews

How to Breed Dogs. A popular Exposition of the Scientific Principles Underlying Reproduction and Heredity in Dogs, with Special Reference to their Practical Application. By *Leon F. Whitney,* D.V.M. Author, The Basis of Breeding, The Builders of America, Pigeon City, The Case for Sterilization, Sex and Birth Control and numerous articles in scientific and other magazines. Revised edition, 418 pages, many illustrations. Published by the Orange Judd Publishing Co., Inc., New York. 1947. Price $4.50.

This work is unique in its field. It is passionately devoted to teaching the art of breeding dogs, based upon the author's experience in breeding more than 6000 dogs, and guided by a thorough knowledge of the science of genetics. With this is coupled a painstaking effort to present the known facts of reproduction and heredity essential to the dog breeder in language he can understand readily.

The original work of which this is the second revision appeared in 1927 as "The Basis of Breeding" and was revised in 1934. For a score of years it has been the standard work on genetics in the dog. The present volume incorporates a mass of new knowledge on the subject that has been accumulated during the past decade for the geneticist and the application of this knowledge in the breeding kennel for the practical dog breeder.

The work is divided into four parts: Part I, *Reproduction,* is essentially the anatomy of the reproductive organs and the physiology of reproduction.

Part II, *Principles of Heredity,* deals with hereditary changes, alternate heredity, modern discoveries concerning sex, sex linkage, twining, inbreeding, variation and pure lines.

Part III, *Heredity in Dogs,* deals principally with the inheritance of coat color, mental aptitudes, scent in hounds, body form, length of legs, tail characteristics and disease resistance.

Part IV, *Practical Considerations,* considers improving old breeds, creating new breeds, dog hobbies, etc.

Perhaps criticism should be reserved for the qualified geneticist or for breeders with an experience approaching that of the author, however, to an average reader the subject matter in Part III appears less clearly and forcefully presented than the remainder of the text; the line between variations and mutations seems drawn much too near to the former and, while the author emphasizes the weakness of selection as a means of improving a breed in Part II, in Part III he seems to contradict his own argument by stressing selection as a matter of prime importance. Can there be any selection, genetically, among the individuals of a litter at weaning time?

Hobday's Surgical Diseases of the Dog and Cat. Fifth edition, edited by *James McCunn,* M.R.C.V.S., M.R.C.S., L.R.C.P., Professor of Veterinary Anatomy, Royal Veterinary College, London. 422 pages, 331 illustrations. Published by the Williams and Wilkins Company, Baltimore, 1947. Price $6.00.

Since the first year of the century "Hobday's Surgery" has been a standard text for students and reference work for practitioners. Though surgery seems subject to fewer innovations than therapy, the development of new and better anesthetics, and the infection combating properties of the sulfa drugs and antibiotic agents have materially enlarged the field of animal surgery and made most welcome this new edition which brings the text up to date.

The text conforms to American practice in most respects; advises the use of anesthetics somewhat less, is less insistent upon the use of rubber gloves, prescribes tincture of iodine where the mild tincture is generally employed here. Blood transfusion is not employed in the technic given, nor is the use of hormones to obviate the necessity for surgery considered.

A feature of this as of earlier editions is the clarity of the indications for the various operations.

* * * *

Animal Nutrition. By *Leonard A. Maynard,* A.B., Ph.D., Sc.D., Professor of Nutrition and Biochemistry and Director of the School of Nutrition, Cornell University. Member, National Academy of Sciences. Second edition; 494 pages; 41 illustrations and charts. Published by McGraw-Hill Book Company, Inc., New York. 1947. Price $5.00.

A second edition of this standard work was made necessary by striking advances in the field of nutrition. Extensive changes of many sections has been made, to incorporate this new material.

The current edition includes 16 chapters. The subject is introduced with three chapters on the expanding field of nutrition, the animal body and its food and physiochemical bases of life processes. Then follow four chapters on metabolism—of carbohydrates, fats, proteins and inorganic elements. A long chapter on the vitamins and chapters on determining digestibility, nutritional balances, food energy and maintenance lay the foundation for the latter third of the text which treats of growth, reproduction, lactation and work.

The text evidences the exercise of much care to make it authentic. Reports of research that the author regards as requiring further testing as to practical application are so given. Yet occasional statements seem to need qualification. Examples are a statement that ruminants do not require a dietary source of thia-

mine. It would be more accurate to add "in health." Every veterinarian doing cattle practice sees many cases of deranged digestion in which vitamin B_1 deficiency comes to be an important part of the ailment. Of ascorbic acid it is stated a dietary need is limited to man, the guinea pig and monkey, which is true for healthy, vigorous animals but scurvy is not rare in aged dogs and vitamin C deficiency occurs in young calves. The interference of pregnancy and lactation with the growth of young females is attributed to an inability of the pituitary to supply the secretions for both growth and reproduction at the same time. This would seem to require considerable supportive evidence. None is given. Like most non-veterinary writers the author becomes badly confused in discussing acetonemia and its causes and when it is a symptom and when, if ever, it is a primary ailment. But all of these are minor matters in nutrition, important as they may be to veterinarians. From a veterinary viewpoint this text is undoubtedly the one of choice on the subject of animal nutrition.

* * * *

Animal Castration. A textbook for the use of Teachers, Students and Practitioners. By *George Ransom White,* M.D., D.V.M. Former instructor, surgical restraint, castration and spaying in the Chicago Veterinary College, Cincinnati Veterinary College, Indiana Veterinary College, Terre Haute Veterinary College and Alabama Polytechnic Institute, State Veterinarian, Tenn. Author of Restraint of Domestic Animals. Third revised and enlarged edition; 292 pages; 254 illustrations. Published by the the Author. 1947. Price $4.50.

"Old Timers" will be surprised to hear of this work. It is just one-third of a century since the first edition appeared and 27 years since the second edition was published. It is crowding three score years since the author began practicing. As a young man he studied under "Farmer" Miles and not unlikely is the last living disciple of that most widely known of cryptorchid castrators. Some 40 years ago the author was widely known, he attended many veterinary meetings, lectured in four veterinary colleges each winter, was treasurer of the AVMA (1905-15) and active in the U. S. Livestock Association. For a score of years he has hardly been heard of outside of Nashville but this text shows he has not been idle.

The work is divided into three parts. Parts I and II are termed "castration by the use of the emasculator." They closely resemble the earlier editions, giving the anatomy of the parts, instruments required, restraint, technic of the operation and after care for both male and female of all domestic animals; all profusely illustrated.

Part III is new and designated "The emasculatome and its use in unsexing male animals." This is plainly the author's choice of operations. His technic differs from common practice only in insistence upon not including all the skin attaching the scrotum to the body within the jaws of the instrument. The circulation should be unimpaired in two-thirds of the scrotum. A second point of equal insistence is that a type and size of emasculatome be used which will permit the operator to make certain the spermatic cord artery and nerve are within the jaws of the instrument and *stay there* until severed—pinched off. Five sizes of emasculatome are illustrated and described. Castration of the young and the adult of bulls, stallions, mules, burros, camels, boars and dogs are illustrated and described.

This work is praiseworthy for its comprehensiveness, its clear descriptions and its many excellent illustrations. It is subject to criticism for placing inadequate emphasis on cleanliness and preparation of the site of operation and to severe criticism for ignoring anesthesia, except for oöthecotomy in the bitch. Nor is the author always consistent. He cites as one of the advantages of emasculatome, its near painlessness, and contrasts the momentary pain its causes with "the prolonged and exruciating paint inflicted by all other methods of castration." Yet that "prolonged and excruciating pain" may be avoided in many of the operations he describes as easily as giving a hypodermic injection.

* * * *

Guide to the Dissection of the Dog. By *Malcolm E. Miller,* D.V.M., Ph.D., Professor and Head of the Department of Veterinary Anatomy, New York State Veterinary College at Cornell University. Planograph, paper bound; 417 pages, 148 illustrations by *Pat Barrow.* Published by the Author. 1947. Price $4.50.

This text evidences much care in preparation and is well illustrated. It is intended for the use of veterinary students in the anatomy laboratory and, beyond question, will serve that purpose well. It should also find a much wider field of usefulness under present circumstances. Bradley's "Anatomy of the Dog" has been unavailable for a decade, and many have been inconvenienced because of inability to get it or any other anatomy of the dog.

While this work lacks the durability and convenience of a cloth bound volume printed from type, it will serve acceptably as a substitute for Bradley's work until the latter is available, and perhaps much longer.

To those who have been disappointed in attempts to obtain the latter work and to others in need of a canine anatomy, Miller's guide is recommended.

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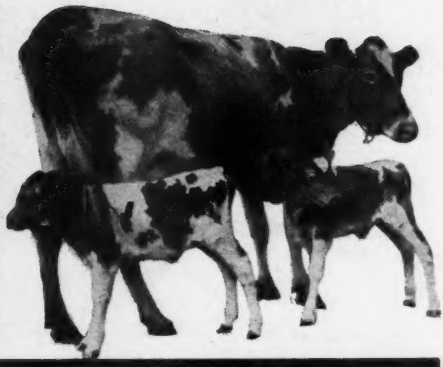

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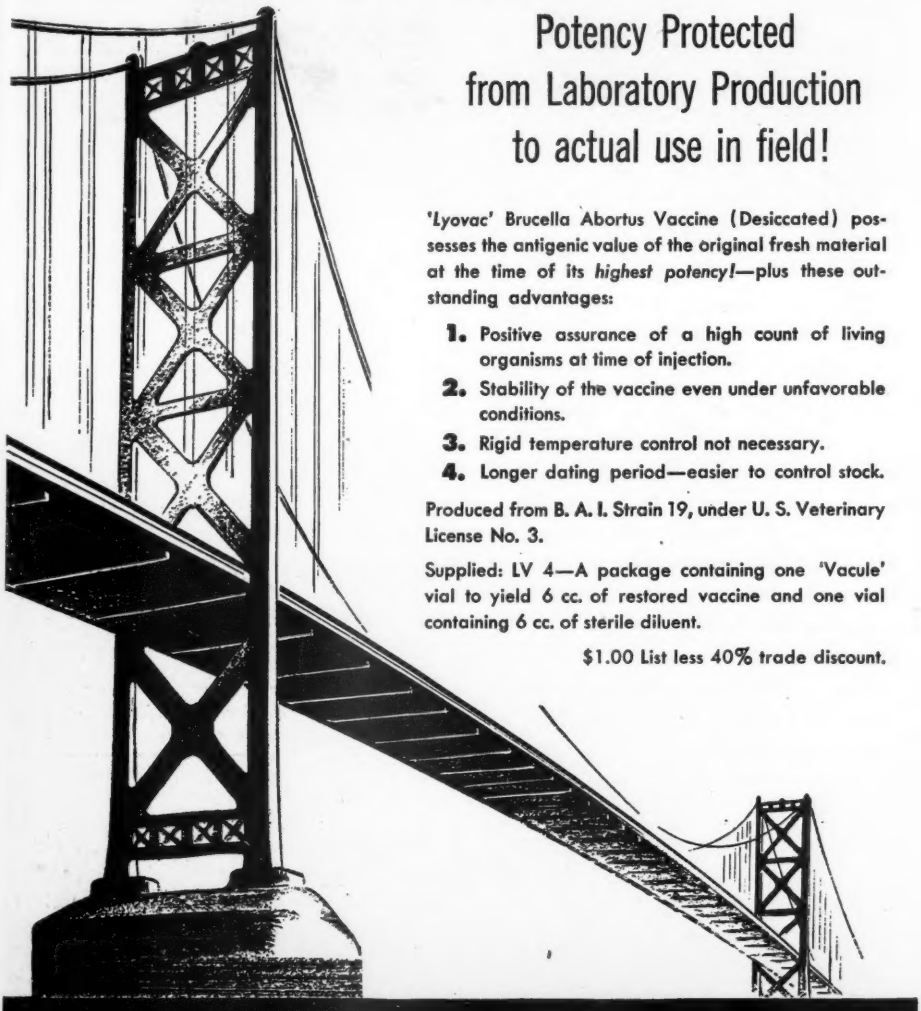

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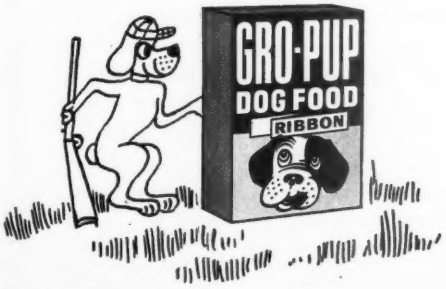

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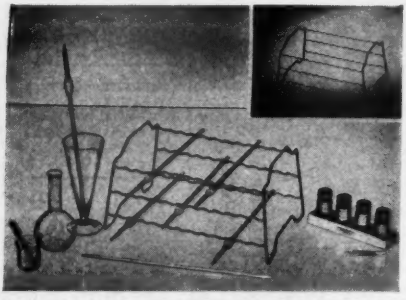
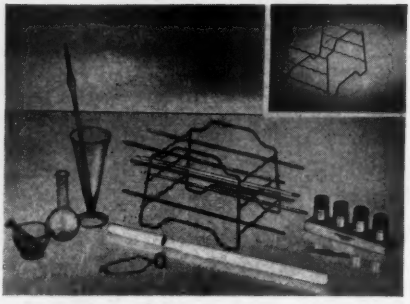
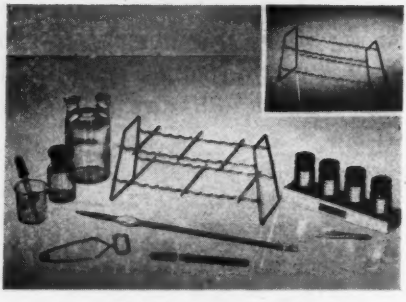


Ballo Pipette Rack



Ballo Laboratory Thermometer Rack



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Arch. Otolaryngol., 43:605, 1946.
E., E., N., & T. Mo., 26:27, 1947.
Laryngoscope, 56:556, 1946.
New Eng. J. Med., 234:468, 1946.
Annals of Allergy, 4:33, 1946.
J. A. Ph., A., (Sc. Ed.) 35:304, 1946.

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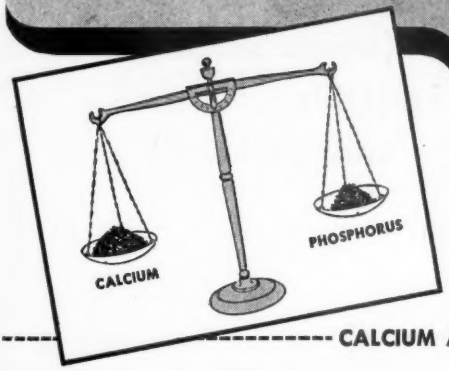

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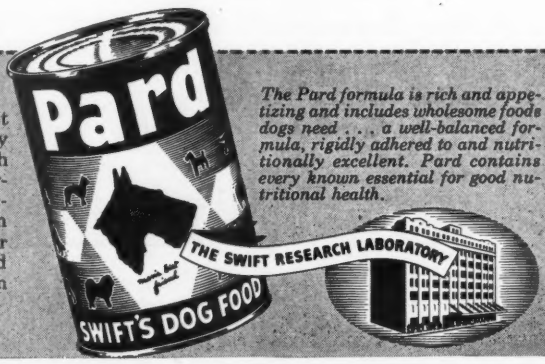

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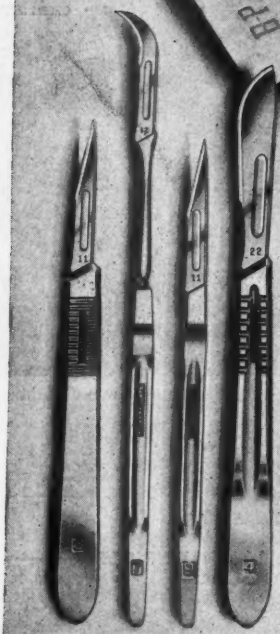

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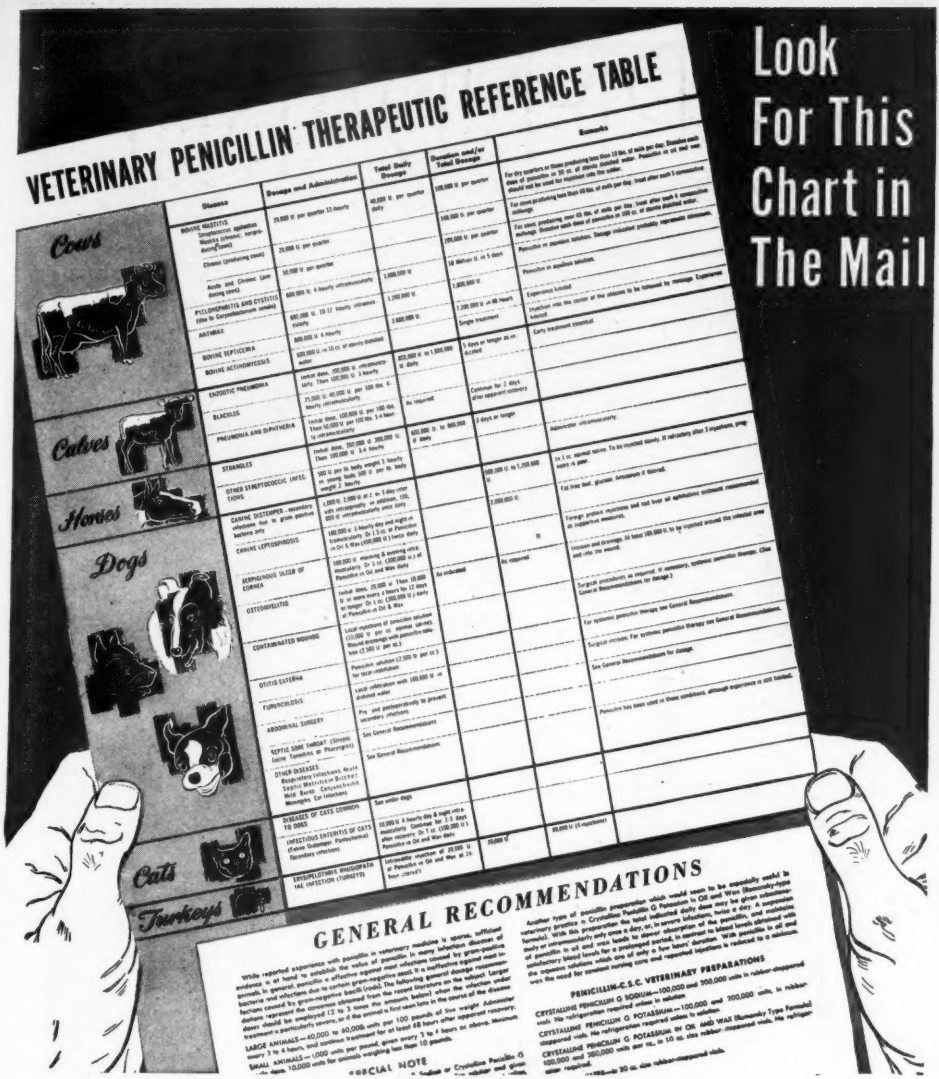

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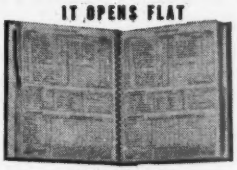

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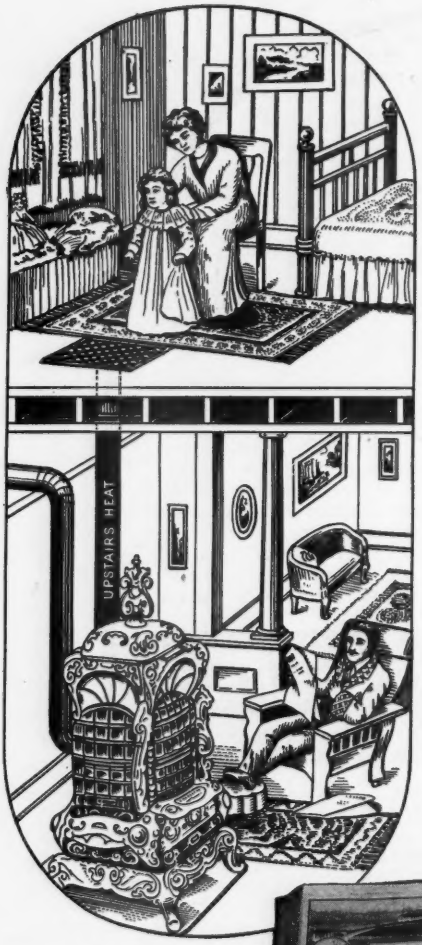

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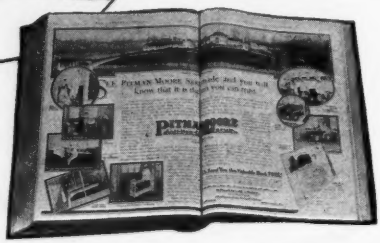
when one of the
most widely advertised
"central heating systems"
consisted of a pipe
leading from a heating stove
on the first floor
to a grated hole
in the woodwork
on the second floor—
that's when
some of the present divisions
of Allied Laboratories, Inc.,
first put into print
the previously initiated policy of

Sales to GRADUATE VETERINARIANS, *Only*

Published in the Country Gentleman, June 20, 1914, the advertisement to the right first publicly declared the policy of confining sales to members of the graduate veterinary profession.



This advertisement is believed to have been the first publicity ever attempted to teach laymen to discriminate between graduate veterinarians and non-graduates, empirics and "quacks."

Allied Laboratories, Inc.

operating as

Pitman-Moore Co.
Sioux City Serum Co.
United Serum Co.
Royal Serum Co.
Sioux Falls Serum Co.

BRUCELLA ABORTUS VACCINE

(STRAIN 19)

Lederle

Controlling Brucellosis by establishing a resistant herd by calfhood vaccination is economically sound. Successful immunization depends on the use of a *viable* vaccine!

BRUCELLA ABORTUS VACCINE *Lederle* meets the U. S. Bureau of Animal Industry standards of viability, pH, dissociation, purity, and safety that are required of all manufacturers operating under Federal license.

In addition, independent laboratories which routinely test vaccines have found that BRUCELLA ABORTUS VACCINE *Lederle* consistently meets and exceeds the viability requirement.

In actual field use, the dependable performance of BRUCELLA ABORTUS VACCINE *Lederle* has proved this product to be a dependable antigen.

PACKAGES

BRUCELLA ABORTUS VACCINE

6 cc. vial 10—6 cc. vials

LEDERLE LABORATORIES DIVISION

American Cyanamid Company

30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

You'll Be Interested to Know That . . .

Man 'O War

The death of Man 'O War November 1st attracted greater public attention than the death of any other animal since that of Messinger 139 years ago. The circumstances of burial were similar in both cases; military salutes being fired over the graves. Taps were sounded for Man 'O War by the 1st Cavalry Division in Tokio at the hour of burial. Messenger didn't get that.

Of course, radio commentators and sports writers proclaimed the "Big Red" to have been the greatest horse that ever lived—which he may or may not have been; there being no standard by which evaluation can be made. Much was made of the fact that of 21 races he started he won 20. But there were Flying Childers and Eclipse (English) that in a larger number of races won all. Maybe the competition wasn't so stiff in those faraway days; and then again maybe it was. The record shows Flying Childers to have run four miles and 380 yards in 7½ minutes. Eclipse is believed to have been even speedier, but he never had to extend himself in a race and at that usually came in one to four furlongs ahead of nearest competitor. Purses were small then compared to the present standards but owners' side bets were much larger than now, so total winnings were probably comparable.

There have been many great horses and Man 'O War was one of the greatest.

■

Veterinary Motion Pictures to Augment Publicity Program

A new, broad-scale program to utilize motion pictures as a new medium of public relations for the veterinary profession, has just been announced by Associated Serum Producers, Inc.

The new move will not curtail in any way the national public relations campaign to educate the public on modern veterinary service, which Associated Serum Producers have been carrying on for a number of years through newspapers, radio, farm papers, and other channels. Rather, say officers of the association, the motion picture medium will be used to augment the basic campaign, to reach the public in still another way, and to round out the program for greater effectiveness.

First steps toward the motion picture campaign have already been taken. Through its educational bureau, the American Foundation for Animal Health, the association has contracted with a nationally-known studio for early production of a modern, dramatic firm in sound. A number of scenes for the production have already been filmed, and the studio hopes to have the complete picture screened and ready for public release within a few months.

The central theme of the picture will be designed to convey to animal owners and the public something of the story of what the veterinary profession means to this country. It will bring out some of the major achievements in veterinary research, and how these achievements as put into practice by the local veterinarian, have helped make America the safest place in the world for livestock production. It will also give the public a better understanding of the practitioner himself, his problems, and the important part he plays in the welfare of the community.

When finished, the production is expected to take approximately 25 minutes running time. This, say motion picture experts, is about the maximum time for which an audience can be held for this type of film. The picture is being written by professional movie writers, directed by a well-known director, and produced by a selected cast of professional actors.

Associated Serum Producers are planning to release the picture nationally, as soon as prints are available in 1948. Major groups to whom it is expected to be shown include farm organizations, 4-H Clubs, Future Farmers of America, Vocational Agriculture classes, women's clubs, civic clubs, road shows, and professional bodies. Men in the motion picture industry estimate that it will be seen by at least one million people during its first year.

■

In cending in the Dog World advertising contract for 1948, Capt. Will Judy wrote: "This order begins the 24th year of consecutive advertising in your publication. Should we not receive a medal of some sort?"

We think he should and are open to suggestions. However, 23 consecutive years in the pages of VETERINARY MEDICINE is not a record. One advertiser, Parke Davis & Co., is beginning its 41st year without skipping an issue, and the list of those advertisers who have not missed an issue in 30 years is a long one.

■

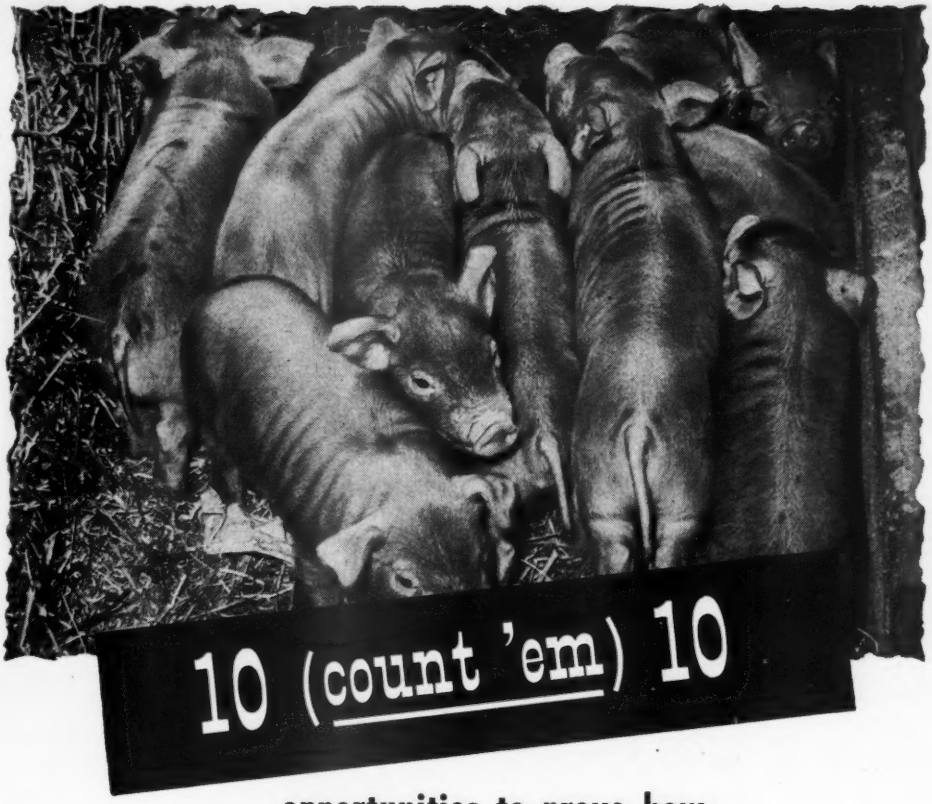
Dr. Hilton A. Smith, Associate Professor, Veterinary Pathology, Iowa State College, Ames, Iowa, is serving as resident consultant in veterinary pathology at the Army Institute of Pathology for approximately three weeks.

Captain Lloyd D. Barnes, V.C., has recently been recalled to active duty and assigned to the Chicago Quartermaster Depot, Chicago, Illinois. Captain Barnes served three years in the European Theater prior to his separation.

Captain Roy C. Thomas, V.C., who was separated from the service in April 1946 after having served three years, has returned to active duty and is assigned to Fort Benning, Ga., with temporary duty at Chicago, Illinois, where he will pursue a course of instruction in meat inspection prior to proceeding to Fort Benning.

Captain Neal C. Batson, who was separated from the service 31 October 1946 upon his return from the Alaskan Department, has been recalled to active duty and is assigned to Fort Jackson, South Carolina.

Captain David Barsky, V.C., has been recalled to active duty and assigned to Fort Jay, New York. Captain Barsky first came on active duty in August 1942 and was separated in May 1946 upon his return from the Pacific.



opportunities to prove how CUTTER B·T·V makes cholera control safer, easier

We can tell you plenty about the remarkable effectiveness of Cutter B-T-V. But you'll be best convinced by *actually using this vaccine yourself.*

Prove how B-T-V—by eliminating live virus—does away with vaccination stunting and post-vaccination "flareups." Pigs stay on full feed, gain faster, reach market sooner.

Prove how B-T-V—by eliminating live virus—makes vaccinating easier and safer. There's no danger of "virus breaks," no danger of contaminating premises. You can vaccinate any time—all or part of a herd.

Prove how B-T-V—by eliminating live virus—can help you *wipe out* hog cholera in your community.

Your clients will thank you for recommending this modern, more effective method of stopping a costly disease.

If you'd like more facts on B-T-V, see your Cutter representative or write direct to Cutter Laboratories, Berkeley, California; 111 N. Canal Street, Chicago; 138 W. 53rd Street, New York.

CUTTER

Fine Biologicals and Pharmaceutical Specialties

Classified Advertisements

For Sale, Assistants Wanted, Positions Wanted, etc 10 cents per word, payable in advance. Minimum charge $2.50; replies 25 cents additional if sent in care of VETERINARY MEDICINE, 7632 S. Crandon Ave., Chicago. Copy must be received by the 3rd of month.

WANTED: Married or single veterinarian to help in a mixed practice. Address No. 675, care VETERINARY MEDICINE.

WIRE FOX TERRIERS: Help your client find the best. All AKC registered from champion stock. Puppies and breeding stock. Frank R. Booth, DVM., Elkhart, Indiana.

FOR SALE: Dog and cat practice in heavily populated area near Newark, N. J., on heavily traveled main street. $4,000.00 cash. Address No. 694 care VETERINARY MEDICINE.

WANTED: Assistantship in mixed or dairy practice. Recent graduate approved college, licensed; possess car, married. At present in small animal practice. Address No. 722 care VETERINARY MEDICINE.

WANTED: Veterinarian of accredited college for Chicago small animal hospital. Good salary, rapid advancement and opportunity for training and experience. Address No. 723 care VETERINARY MEDICINE.

BUILDING PROBLEMS? Get ideas, plans, suggestions from revised 4th edition Judy's Kennel Building & Plans $3. For your reading table, Dog World—$3 1 yr. $5 2 yrs. JUDY PUBLISHING CO., 3323 Michigan Blvd., Chicago 16.

BOOKS FOR SALE: A few copies of each of the following books are now available: Equine Practice, Sheep Practice, Vitamins and Hormones, Vitamins and Distemper. All cloth bound. While the supply lasts, $1.00 each. Address VETERINARY MEDICINE, 7632 S. Crandon Ave., Chicago, Ill.

WANTED AT ONCE: Licensed single veterinarian, preferably with car. All equipment furnished. To assist in mixed practice in Eastern New York. State experience and salary expected. Address No. 717 care VETERINARY MEDICINE.

WANTED: Assistant veterinarian for small animal practice in Connecticut. Opportunity to learn surgery and X-Ray. Apartment available. State age, school and full qualifications first letter. Address No. 719 care VETERINARY MEDICINE.

POSITION WANTED: Veteran, experienced, married, Middlesex graduate, licensed, wishes position in Virginia with small or mixed animal practitioner with chance to purchase practice in the future. Address No. 695 care VETERINARY MEDICINE.

FOR SALE: Going, lucrative, mixed practice in Texas. Most modern small animal clinic in 100 mile radius. Immediate money maker with all drugs and equipment to go. Plenty of expansion room. Leaving because of ill health in family, but will break a new man in. $10,000.00 cash required to handle. Address No. 714 care VETERINARY MEDICINE.

WANTED TO BUY: Experienced veterinarian of recognized school wants to buy mixed practice predominantly dairy in city of 15,000 or more. Southern half of Midwest preferred. Give details regarding practice, equipment, community, net income, terms, etc. Address No. 725 care VETERINARY MEDICINE.

WANTED: For Civil Service Position—Supervisor of Meat Inspection. Beginning salary $350.00 per month. Maximum age 45. Substantial pension rights. Permanent tenure. Examination will consist entierly of appraisal of the applicant's experience and professional record. Candidates are required to be graduate veterinarians and have experience in ante mortem and post mortem experience in meat inspection and a thorough knowledge of dairy and meat products production, processing and distribution. Write City Service Commission, City Hall, Wilwaukee, Wisconsin.

WANTED: Graduate veterinarian as assistant in Middlewest mixed practice. Please give experience, college, age, religion and submit photo. Address No. 726 care VETERINARY MEDICINE.

FOR SALE: Large animal practice near Los Angeles. 90% horses; mostly thoroughbred breeding farms. Five room house and large animal hospital for lease; reasonable. Full price $10,000.00. This is less than one year's net income. Half cash required. Address No. 712 care VETERINARY MEDICINE.

FOR SALE: Old established general practice. Town 990 pop. Three churches. Good High School. Rich livestock country. Prosperous farmers. Lot 60 x 120, office bldg., and hospital. Hot water system, safe, refrigerator, good telephone service. Price $12,500.00. Address No. 718 care VETERINARY MEDICINE.

POSITION WANTED: Prefer position in Michigan, Indiana, Ohio or Illinois with mixed animal practitioner with option to buy in future or immediately on reasonable terms. Married, licensed in Indiana and Michigan. Experienced; references furnished on request. Address No. 724 care VETERINARY MEDICINE.

TOTAMIN* A

IMPORTANT

TOTAMIN A is a highly concentrated mineral-vitamin mixture, scientifically prepared in powder form, that actually helps produce alert dogs with strong bones and a fine coat. Breeders of show dogs and hunting dogs report excellent results. TOTAMIN B, for livestock averages as much as 33 times the concentration of ordinary bulk mineral-vitamin mixtures. Carry a case in your car! Sold only through the veterinarian.

Send for illustrated folder today.

*T. M. Reg.

NUTRITIONAL MINERALS, Inc. 309 N. W. 8th St. Evansville 8, Ind.

The Massachusetts State College, Amherst, recently became the University of Massachusetts. A $3,000,000 building program for the university is now in progress.

■

ASK YOUR JOBBER

McKeon's

"Sulpho Dip"

TRADE MARK REG.

for

Treatment of Sarcoptic Mange

ECONOMICAL—Costs few cents per treatment

SAFE—Harmless even for cats

EASY to dispense: fool-proof in hands of laity.

FREE sample on request. Let's get acquainted.

SOLD TO VETERINARIANS ONLY

Trial gallon on 30 days' approval, $3.00 f.o.b.

SULPHUR PRODUCTS CO.

GREENSBURG, PA.

Distributors wanted in some territories.

ARMOUR ANTI-HOG CHOLERA SERUM

Potent Effective Dependable

SOLD TO GRADUATE VETERINARIANS ONLY

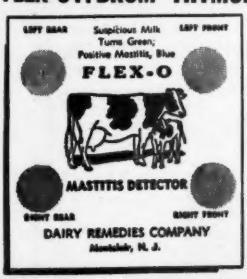
ARMOUR and Company • VETERINARY DIVISION • KANSAS CITY 18, KANSAS

The "Societa" Italiana per il Progresso Della Zootecnica (Italian Association for the Progress of Zootechny) was established at Milan on July 17th, 1947. Scientists, technicians and breeders from all over Italy are assembled in this Association aiming to encourage by all possible means zootechnical progress in Italy, and to keep a close technical collaboration with all zootechnical and veterinary institutions throughout the world.

Professor T. Bonadonna of the University of Milan and Director of the Experimental Institute for Artificial Insemination "Lazzaro Spallanzani" is Chairman of this Association.

■

FLEX-O..BROM THYMOL



MASTITIS DETECTOR

• RAPID •
• SIMPLE •
• RELIABLE •
INEXPENSIVE •

These handy detectors are meeting with increasing approval of veterinarians and dairymen all over the country.

Supplied in boxes of 50 at $6.00 per dozen, postpaid.

DAIRY REMEDIES CO.
MONTCLAIR, N. J.

FISTONE

FISTONE is the ORIGINAL internal treatment for chronic suppurative affections generally due to internal focal infections in most such cases. With FISTONE surgery is unnecessary. The cost is nominal. Results are uniformly good and it pays both practitioner and client to use FISTONE in chronic suppurative conditions met in equine practice.

THE FISTONE & APPLIANCE COMPANY
College Corner, Ohio

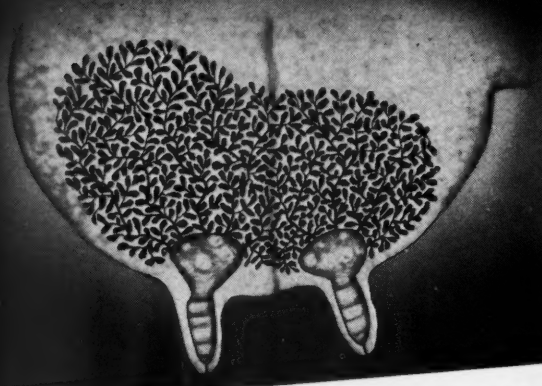
Regular Price—One dozen boxes..... 10.00

One-half dozen boxes..... 5.00
(Add 20% outside continental U. S.)

Dr. .....

Address .....

What the Veterinary Profession *Means to Mankind*



Your FIGHT ON MASTITIS

*Above — Cross-section of udder showing delicate milk-secreting system.

LIKE A BAD APPLE in the barrel, just one mastitis cow may soon infect your entire milking string. Yet it isn't easy to stamp out this treacherous disease—because it occurs in varied forms, from different causes. What works in one case may be useless in another That is why Michigan State College recently announced that . . ."for these reasons veterinary care is essential. We urge each dairyman to *consult his local Veterinarian early.*" Don't trifle with mastitis. Experimenting, gambling on "easy cures," may cost you enormous milk losses. Get the help of your Veterinarian and go after this disease with all the skill that modern science can give you.

AMERICAN FOUNDATION FOR ANIMAL HEALTH

THIS MESSAGE is appearing in leading farm magazines this month, sponsored by

ASSOCIATED SERUM PRODUCERS

★

MEMBER COMPANIES

Allied Laboratories, Inc.
Blue Cross Serum Co.
Corn Belt Laboratories, Inc.
Fort Dodge Laboratories, Inc.
Grain Belt Supply Co.
Jensen-Salsbery Laboratories, Inc.
Liberty Laboratories
Missouri Valley Serum Co.
Norden Laboratories
Pitman-Moore Co.
Sioux City Serum Co.
Sioux Falls Serum Co.
The Columbus Serum Co.
The Corn States Serum Co.
The Gregory Laboratory
The National Laboratories Corp.
The Royal Serum Co.
The Southwestern Serum Co.
The United Serum Co.

THERAPOGEN

THE ANTISEPTIC ESPECIALLY DEVELOPED FOR VETERINARIANS

OFTEN IMITATED
•
SELDOM EQUALLED
•
NEVER SURPASSED

THEODORE MEYER EST.
213 South 10th St., Philadelphia 7, Pa.

WRITE FOR INFORMATION—DISTRIBUTORS' NAMES FURNISHED ON REQUEST

To Crow for Pathe

Warner Brothers Pictures, Inc., will select a new rooster at the Oklahoma State Poultry Show on December 8 to use on the main title of Warner Pathe News, This will be a successor to the rooster that has been a trademark of Pathe News for nearly 40 years.—*Everybody's Poultry Magazine.*

State Board Examinations

Oklahoma Board of Veterinary Medical Examiners will hold examinations Jan. 20-21, 1948, in office of State Department of Agriculture, State Capitol, Oklahoma City. Application should be made in advance to secretary, N. L. Astle, P.O. Box 364, Blackwell, Okla.

Dr. Naylor
Medicated TEAT DILATORS
Medicated surgical dressings for the Teat Canal

A dependable treatment for retaining normal milk flow through the canal of injured teats — Scab Teats, Cut or Bruised Teats and for keeping teat canal open in post-operative therapy.

Dr. Naylor Dilators are soft, absorbent, surgical dressings impregnated with SULFATHIAZOLE and Methyl Violet. The medication is IN the Dilators. They perform the same function in the teat canal as a medicated surgical dressing applied to external wounds.

Due to their soft, absorbent construction, Dr. Naylor Dilators fit either large or small teats and allow for normal contraction and expansion of the sphincter muscles while Dilator is inserted. They carry antiseptics and healing agents into teat canal to combat infection and promote healing; furnish soft, absorbent protection to the injured lining and keep teat canal open in its natural shape while tissues heal.

Easy to insert, stay in the teat. Protected in antiseptic ointment until ready for use.

Dollar Package (contains 45 Dilators) ..... $8.00 Per Doz.
Fifty Cent Package (contains 16 Dilators) ..... 4.00 Per Doz.
Plain Dispensing Package (contains 12 Dilators) ..... 3.00 Per Doz.

H. W. NAYLOR CO., MORRIS, N. Y.

NOW AVAILABLE

The A-N camera which filmed Famous Beach Landings, fights in the air, bombings of objectives and scores and scores of other Army, Navy and Marine Corps pictures of the war on every front. This was the camera used to film the popular Memphis Belle, Fighting Lady, etc., of screen fame.

16MM MAGAZINE LOAD ELECTRIC MOTION PICTURE CAMERA

THE OFFICIAL COMBAT CAMERA OF THE UNITED STATES ARMY, NAVY AND MARINE CORPS.

This famous camera, the official 16mm, battery operated, motion picture camera of the U. S. Army, Navy, and Marine Corps is now available for the first time to the public. Millions of dollars were expended by our government, and the experience, efforts, and knowledge of the photographic world were made available in order to design and produce this camera. Mounted on fighting aircraft, naval guns, ships, tanks, motor trucks, and carried by hand the A-N camera performed brilliantly in the thick of battle in all theatres of war.

LENS This lens is the result of much research, designing, and engineering, plus the expenditure of large sums of money by the U. S. government. It is declared by the leading lens makers of the country to be the finest motion picture lens of its type ever made.

ELECTRIC Electrically powered, this camera doesn't slow down when cold or require rewinding just when something is occurring that you want to film. It can be operated on batteries or on any 110 volt, 60 cycle, AC.

BATTERIES Tests indicate that one set of batteries used intermittently will suffice for more than fifty, 50-foot films. Electric current, when available, may be used, thus saving the batteries for outdoor photography. Four standard-make, 6-volt, radio, "A" batteries are supplied with the camera.

MAGAZINE TYPE The film magazine is removable at any point in the run, and may be replaced later without loss of film. A gauge shows the amount of unused film in each magazine. There is also a place for recording subjects and dates. Natural color, black and white, indoor or outdoor films may be interchanged.

One magazine and 50 feet of Du Pont black and white, combined indoor and outdoor, film is supplied with the camera. It can be refilled for $3.50. This price includes processing (developing). Extra filled magazines $4.00 each.

ADDITIONAL EQUIPMENT A transformer for 110-volt, 60 cycle current.

A color filter for views of clouds, water scenes, mountain tops, etc., and a socket for attaching to a tripod.

Two extension cords; one for the batteries supplied or for connecting to automobile batteries; the other for house current.

A view finder (on top of the camera in the illustration) which shows clearly the exact field being photographed.

A handsome, convenient durable carrying case, which holds the camera, the batteries, two extension cords and the transformer.

USES The fields of usefulness of motion pictures are innumerable and extend beyond anything contemplated for "still" pictures. For professional use it affords a veterinarian a pictorial record of his unusual cases, of his unique equipment, of particularly interesting operations, of consultations. It is useful for the identification of animals and for litigious cases.

Then, there is its capacity to re-enact points of high interest in hunting, fishing, racing, sailing, football and other sports; scenes on vacations, at picnics and parties, in the garden or on the front porch when special visitors call, etc.

And, of course, views of the home and family from the first uncertain steps of the children to the wedding receptions.

PRICE

These war surplus cameras are new. They cost the government hundreds of dollars each. They are being advertised as great bargains in camera stores in some cities at $149.50 to $169.50 without the magazine and film included in this offer. Under OPA the ceiling price was $149.50.

Special price, $127.50, delivery prepaid

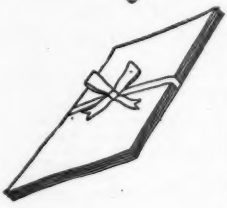
VETERINARY MAGAZINE CORPORATION

7632 S. CRANDON AVE.
CHICAGO 49, ILLINOIS

For once they actually agree!

Hope and Crosby, in the movies, seldom see eye to eye.

But there's one thing they really do agree on —they both think U.S. Savings Bonds make wonderful Christmas gifts!



SAYS BOB: "They're swell for *anybody* on your list. You couldn't pick a nicer, more sensible, more welcome present. Even Crosby knows that."

SAYS BING: "I hate to admit it, folks, but Hope is right. And remember this—you can buy Bonds at any bank or post office in the U. S. A."

BOB AND BING (together): "This Christmas, why not give the finest gift of all—U.S. Savings Bonds!"

Give the finest gift of all ... U.S. SAVINGS BONDS

Contributed by this magazine in co-operation with the Magazine Publishers of America as a public service.

Better Sheep Parasite Control

Methods to prevent sheep from becoming infested with internal parasites, together with improved control measures, are to be sought through a research project announced by the USDA. Recommendations of the Livestock Advisory Committee, which emphasized "continuing research on livestock diseases, parasites, and insects" will be followed because losses to the sheep industry from stomach worm disease, liver fluke disease, lungworms, and from . . . infestations with roundworms and tapeworms are severe, and death losses common.

Diseases of sheep caused by parasites outstrip all others in importance. Stomach worms are the No. 1 enemy of sheep. Liver flukes produce a high morbidity and mortality wherever they gain a foothold. Nodular worms are the principal cause of difficulties encountered in finishing late lambs for market. Lungworms, tapeworms, and other parasites add to the damage done by parasitic infestations. The aggregate losses have led some sheepmen to abandon production entirely.

The project will involve laboratory studies and field experiments with infected and control flocks. In a line of research involving the liver tapeworm, for example, investigators will seek first to determine the season of the year when the parasites attain fertile maturity and discharge the egg-containing segments with the droppings. Another aspect of the work will be to learn how parasite-free lambs become infected.

Ascertainment of necessary basic facts will be followed by tests of preventive and curative treatments, together with protective systems of management. The Department has designated, as the project's leader, Dr. Benjamin Schwartz, head of the Zoological Division of the Bureau of Animal Industry.

SNOOT CLIP

A superior muzzle clamp for smaller breed dogs

ONLY $2.95 Postpaid

Snoot-Clip is the most effective yet painless clamp ever devised. Made of light, strong aluminum, rounded to prevent injury. Springs keep muzzle closed but the smooth bit permits partly opened mouth for easy breathing.

Manufacturers of laboratory cages

BUSSEY PRODUCTS CO.

6000-93 W. 51st ST. CHICAGO 38, ILL.

Winthrop-Stearns, Inc., is the name of a new company, a subsidiary of Sterling Drug Inc., which has taken over the Winthrop Chemical Company, Inc., New York, and the Frederick Stearns and Company, Detroit. Theodore G. Klumpp, president of Winthrop Chemical Company, Inc., becomes president of the new company, and other key employees of Winthrop will go with the new organization.

The Semen of Animals and Its Use for Artificial Insemination

By

James Anderson, B.Sc., Ph.D., M.R.C.V.S.

This is a remarkably comprehensive and skillfully arranged discussion of the subject of artificial insemination of animals. Although it comprises but 151 pages, the pages are large and the type condensed so that the contents equal in extent that of the usual 300-page text.

In addition to the author's important contribution to the text from his own experience and research, he has summarized the work of others to the extent of approximately 600 manuscripts, bulletins and chapters of scientific works. This gives the text world-wide application.

The discussion applies mainly to cattle, sheep, horses, and swine, but adequate attention is given to the dog, fox, rabbit, fowl and turkey. The treatise is scientific and authoritative and will prove of great convenience and value to veterinarians having anything to do with artificial insemination.

Price: $2.00 Prepaid

Veterinary Magazine Corporation

7632 S. Crandon Ave., Chicago 49

DIAGNOSTIC METHODS *in* VETERINARY MEDICINE

Second Edition by

GEO. F. BODDIE, M.R.C.V.S.

Professor of Medicine, Royal (Dick) Veterinary College

The plan of this work comprises an introduction in which the development of symptoms and methods of examination are discussed. This is followed by the preliminary general examination which is, in the main, applicable to all species. A commendable feature in this, and in the discussion of special examinations, is numerous examples illustrating the use of methods or the conditions under which the symptoms, that are discussed, may occur.

The special examinations are discussed under the following heads: Digestive system of the horse, of ruminants, of swine, and of the dog and cat; the respiratory system; the circulatory system; the urinary system; the nervous system; the skin; the lymphatic system; the eye; the ear; the genitalia; the muscles, bones and joints; allergic reactions; tuberculin and mallein tests; collection of material for laboratory tests; urine analysis; clinical bacteriology; clinical helminthology and clinical hematology.

The discussions are comprehensive and include the latest information on the detection of disease in all domestic animals, including poultry.

Price $3.50 Prepaid

Veterinary Magazine Corporation

7632 S. Crandon Ave., Chicago 49, Ill.

SPECIAL

DAIRMOL DUSTING POWDER
FOR GRANULAR VAGINITIS

Antiseptic **Astringent**

"THE DAIRMOL WAY"

Compounded under the direction of two veterinarians of exceptional experience. Highly recommended by leading herdsmen as the best treatment for the purpose.

Also mfrs. of LIQUID Dairmol Antiseptic and Deodorant.

DALARE ASSOCIATES
23rd and Locust Sts. PHILADELPHIA 3, PA.

Coming Meetings

American Society of Animal Production, Hotel Sherman, Chicago, Nov. 28-29, 1947. Sec. W. G. Kammlade, 110 Stock Pavilion, University of Illinois, Urbana.

United States Livestock Sanitary Association, Hotel LaSalle, Chicago, Dec. 3-5, 1947. Sec. R. A. Hendershott, Bureau of Animal Industry, Dept. of Agr., Trenton 8, N. J.

South Dakota Veterinary Medical Association, Carpenter Hotel, Sioux Falls, Dec. 9-10, 1947. Sec. J. T. McGilvray, Sioux Falls.

Nebraska State Veterinary Medical Association, Cornhusker Hotel, Lincoln, Dec. 11-12, 1947. Sec. L. V. Skidmore, College of Agriculture, Lincoln.

New York State Veterinary College, 40th

CALF SCOUR COMPOUND

with

VITAMINS
(Improved Formula)

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Ohio State Veterinary Medical Association, Deshler-Wallick Hotel, Columbus, Jan. 7-9, 1948. Sec. F. J. Kingma, Ohio State University, Columbus.

Arkansas Veterinary Medical Association, Little Rock, Jan. 15-16, 1948. Sec. T. D. Hendrickson, Route 5, Box 422A, Little Rock.

Texas State Veterinary Medical Association, Gunter Hotel, San Antonio, Jan. 19-20, 1948. Sec. E. A. Grist, College Station, Texas.

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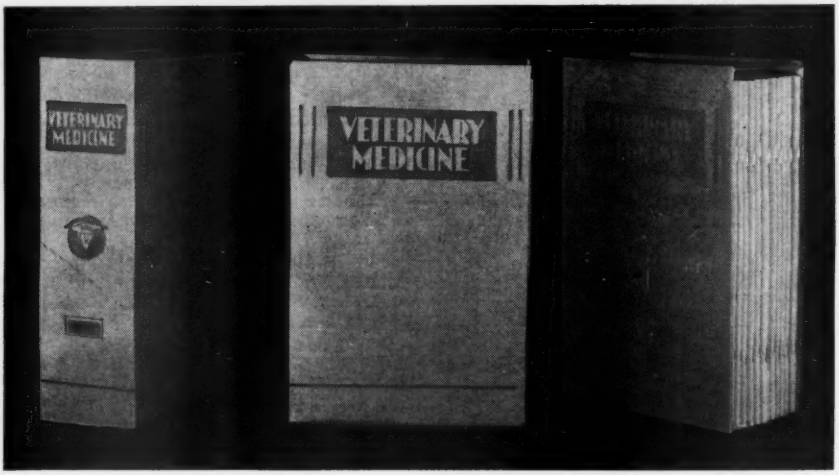

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Veterinarians, School of Veterinary Medicine, East Lansing, Mich., Jan. 20-23, 1948. C. S. Bryan, Acting Dean, School of Veterinary Medicine, East Lansing.

Oklahoma Veterinary Medical Association, Skirvin Tower Hotel, Oklahoma City, Jan. 22-23, 1948. Sec. D. B. Pellette, 505 Leonhardt Bldg., Oklahoma City.

North Carolina State College Conference for Veterinarians, North Carolina State College, Raleigh, Jan. 27-30, 1948.

Illinois Veterinary Medical Association, Pere Marquette Hotel, Peoria, Jan. 28-30, 1946. Sec. A. G. Misener, 6448 N. Clark, Chicago.

Kansas Veterinary Medical Association, Topeka, Feb. 5-6, 1948. Sec. C. W. Bower, 3119 Stafford St., Topeka.

New Jersey Veterinary Medical Association, Hotel Hildebrecht, Trenton, Feb. 5-6, 1948. Sec. J. R. Porteus, Box 938, Trenton 5.

Chicago Veterinary Medical Association, Palmer House, 2nd Tuesday of each month. Sec. Robert C. Glover, 1021 Davis St., Evanston.

Massachusetts Veterinary Association, Hotel Statler, Boston, 4th Wednesday of each month. Sec. C. L. Blakely, 180 Longwood Ave., Boston.

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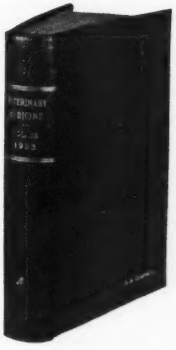

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Deaths of Veterinarians

J. M. Barrington, Huntingdon, Canada, died October 9, 1947.

Robert O. Blitz, Langhorne, Pa., UP '22, died August 29, 1947. He had been in the veterinary research department of E. R. Squibb, Inc., for some time.

Franklin C. Blakely, Newburyport, Mass., UP '08, died October 4, 1947, after a short illness. For many years he was a member of the Massachusetts Veterinary Medical Association.

W. J. Chandler, Milton, Ill., KCVC '09, died August 26, 1947.

J. W. Connaway, 88, Columbia, Mo., CVC '90, died October 5, 1947, after a long illness. Doctor Connaway was connected with the University of Missouri for 57 years.

H. G. Coughlin, 63, Edina, Mo., KCVC '13, died August 17, 1947.

Herbert Elzinga, 67, Marne, Mich., GR RAP '06, died July 13, 1947.

Francis Falls, Philadelphia, Pa., UP '06, died August 5, 1947.

Meiert Grootes, Twin Falls, Idaho, CVC '14, died October 17, 1947.

G. H. Harland, Pewaukee, Wisc., CVC '04, died June 8, 1947.

J. G. Harvey, Detroit, Mich., ONT '12, died August 23, 1947. He had practiced in Guelph, Canada, and been an instructor at the Ontario Veterinary College at Guelph before moving to Detroit 20 years ago.

Animal Breeding

By

A. L. HAGEDOORN, Ph.D.

The author was formerly a plant geneticist and had a part in the revolution in plant breeding that began about the turn of the century. In 1910 he started to investigate animal breeding problems and during the past 20 years has devoted his whole time to animal genetics in the United States, France, Germany, the Dutch Indies and the Netherlands. His conclusion from this long experience in many lands is that animal breeding lags thirty years behind plant breeding. Plant breeders select upon breeding value; animal breeders upon individual merit.

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E. S. Hess, 69, Indianapolis, Ind., MC K '06, died September 9, 1947, after a lingering illness. He had practiced in Kentland, Ind., until he became chief inspector in the office of the State Veterinarian about two years ago.

Wm. H. Ivens, Sr., 63, Ardmore, Pa., UP '10, died August 11, 1947.

W. E. Kocher, South St. Paul, Minn., CVC '13, died October 7, 1947, after a long illness.

C. O. Maconachie, 69, Victoria, B. C., Can., ONT '06, died May 14, 1947. Born in England he had served in the South African War after which he attended the Ontario Veterinary College. He also served in World War I. He was awarded honors for his service in each war. He had served with the Health of Animals Division since shortly after his graduation.

Alvah R. McLaughlin, Sr., Kansas City, Mo., MSC '26, died August 4, 1947. He had served on the faculty of Michigan State College and of the University of Wyoming before he started practice in Kansas City. A. R. McLaughlin, Jr., KSC '47, has resigned his position at Purdue to take over the practice of his late father.

Wm. F. McNamara, Sterling, Mass., CVC '14, died August 15, 1947.

Jas. T. Molison, 74, Mount Gilead, O., ONT '05, died August 10, 1947.

W. H. Moyer, Sr., 83, Mechanicsburg, Pa., ONT '91, died May 12, 1947. He had practiced 56 years.

H. E. Mulford, Osgood, Ind., CIN '11, died May 16, 1947.

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Clark W. Olson, 54, New Ulm, Minn., ONT '22, died September 5, 1947, of a heart attack as he was driving to make a call. He served in World War I.

J. W. Oltmanns, Watseka, Ill., CVC '16, died August 2, 1947.

E. C. Ray, Kokomo, Ind., IND '16, died August 19, 1947. He had served in World War I.

W. S. Seibold, Guntersville, Ala., API '15, died June 27, 1947.

Sheldon Scoville, 26, Maplewood, N. J., API '43, died October 2, 1947. Although he had received Pasteur treatment after being bitten by a rabid dog he died of rabies. He had been in practice in Newark since his discharge from military service.

S. S. Severn, Seguin, Texas, KCVC '11, died August 4, 1947.

Edgar Burke Shaw, 75, Rollalong Plantation, Clinton, La., died July 30, 1947. He had retired in 1941 after 40 years in the B.A.I. in hog cholera control work.

R. M. Shreve, 61, Panora, Iowa, CVC '10, died July 21, 1947. He had practiced at Panora since his graduation.

Thomas W. Stewart, South Sioux City, Nebr., COLO '23, died September 23, 1947, of a heart attack.

Cornelius Vanderwarf, 62, Chicago Heights, Ill., MC K '10, died in the Pine Rest Sanitarium, Grand Rapids, October 11, 1947, after a long illness. He had served on the Board of Education and on the Park board in his town. He had practiced in Chicago Heights 30 years.

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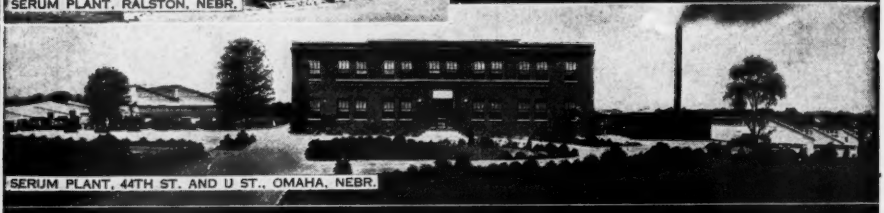

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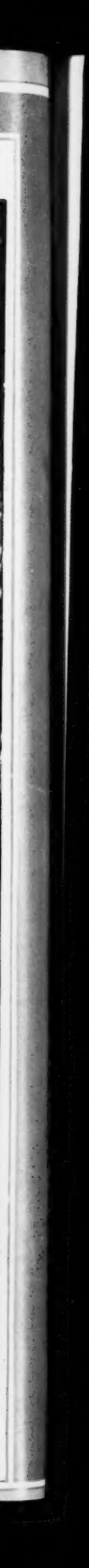
Omaha, Nebraska